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SESSION 2022-2023
(1.3.2)

S.NO	INTERNSHIP DISSERTATION OF THE VERY FIRST GROUP OF EACH SEMESTER OF PROGRAMS ALONG WITH THE INTERNSHIP COMPLETION CERTIFICATES	COURSE CODE (if any)
1	Internship Report with certificate	B.TECH (ME)
2	Internship Report with certificate	B.TECH (ECE)
3	Internship Report with certificate	MBA

Director
R.D. Engineering College
Duhai, Ghaziabad

INDUSTRIAL TRAINING REPORT

Submitted to

R.D. Engineering College

In Partial Fulfillment of the Requirement for the Award

of the Degree of

Bachelors of Technology

In

Mechanical Engineering

By

SUNNY RAJ (2102310409021)

R.D. ENGINEERING COLLEGE

(DUHAI, GHAZIABAD, U.P.)

Director
R.D. Engineering College
Duhai, Ghaziabad

IN AFFILLATION WITH

Dr. A.P.J. ABDUL KALAM TECHNICAL UNIVERISTY, LUCKNOW, UTTAR PRADESH

PREFACE

The importance of industrial training needs no emphasis. One of the characteristics of modern scenario is the increasing rapidity of change. This intensifies the need for study, adaptation and training. For an engineering student the practical training is as important as the theoretical knowledge and sometimes more than the theory part. The practical training not only makes a student familiar with the atmosphere and conditions of industry but sufficiently increases his/her knowledge by providing a sense of confidence and motivation.

I personally feel proud and happy in writing this training report that I have completed my training in such a good organisation which taught me so many useful things.

Director
R.D. Engineering College
Duhai, Ghaziabad

VOCATIONAL TRAINING PROJECT REPORT

STEEL AUTHORITY OF INDIA LTD.

BOKARO STEEL PLANT

Project title: Study and improvement of slab conveying system

(*12h September 2023 to 7th October 2023*)

Submitted by	**Sunny Raj**
Department	**Mechanical Engineering**
Session	**2022-2023**
University Roll Number	**2102310409021**
College Name	**R.D Engineering College (Duhai, Gaziabad, U.P)**

Under the Guidance of **Mr. Harish Suthar, Mr. Rajnikant, Mr. Ashok Tiwari**

CERTIFICATE

This is to certify that Sunny Raj (Bsl urn: 5911633) R D Engineering College Duhai Ghaziabad UP, has undergone Project based training in "Steel Authority of India Limited (SAIL), Bokaro Steel Plant, Bokaro, Jharkhand" in the department of STEEL MELT SHOP 2 & CONTINOUS CASTING SHOP (SMS 2 & CCS) for a period of 4 WEEKS from 12 sep 2023 to 07 oct 2023, under my guidance.

His performance was satisfactory so as to fulfill all the requirements for successful completion of the training.

Date:- 6/10/23

(Signature)

अशोक कुमार तिवारी
महाप्रबन्धक (परिचालन)
इस्पात गलनशाला–2
सेल, बोकारो स्टील प्लान्ट

सेल SAIL

Director
R.D. Engineering College
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ACKNOWLEDGMENT

I would like to express my sincere gratefulness and profound gratitude to **STEEL AUTHORITY OF INDIA LTD**. for providing an opportunity to undergo Project training at Bokaro Steel Plant, Bokaro Steel City, Jharkhand.

I express my deepest gratitude and indebtedness to My Project and Company Mentor **Mr. Harish Suthar**, **Mr. Ashok Tiwari** and **Mr. Rajnikant**. They were a constant source of inspiration for me and were always ready to guide me despite their busy schedule.

Being a student, I got a platform to gain more knowledge by means of this training and subsequently an opportunity to reveal my abilities. So, for this, I heartily thank my faculties of my Mechanical Department in particular **Prof. Shailesh Kumar**, HOD,ME, Training and placement officer, Dronacharya Group of Institution Greater Noida for his continuous guidance for the successful completion of the training.

I wish to express my profound sense of gratitude to all the faculty members of the MECHANICAL ENGINEERING Branch for their delightful guidance and constant encouragement throughout the process, they have always been a great inspirational motivator for me.

I take this as my opportunity to express my wholehearted thanks to all other persons involved in the process who made it possible to achieve the completion of the summer report with success.

List of contents

"To be a respected world class corporation and the leader in Indian steel business in quality, productivity, profitability and customer satisfaction"

Introduction

Steel Authority of India Limited (SAIL) is the leading steel-making company in India.It is a fully integrated iron and steel maker, producing both basic and special steels fordomestic construction, engineering, power, railway, automotive and defence industries and for sale in export markets. SAIL is also among the seven Maharatna of the country's Central Public Sector Enterprises. SAIL manufactures and sells a broad range of steel products, including hot and cold rolled sheets and coils, galvanized sheets, electrical sheets, structural, railway products, plates, bars and rods, stainless steel and other alloy steels. SAIL produces iron and steel at five integrated plants and three special steel plants, located principally in the eastern and central regions of Indiaand situated close to domestic sources of raw materials, including the Company's iron ore, limestone and dolomite mines. The company has the distinction of being India's second largest producer of iron ore and of having the country's second largest mines network. This gives SAIL a competitive edge in terms of captive availability of iron ore, limestone, and dolomite which are inputs for steel making. SAIL's International Trade Division (ITD), in New Delhi- an ISO 9001:2000 accredited unit of CMO, undertakes exports of Mild Steel products and Pig Iron from SAIL's five integrated steel plants. With technical and managerial expertise and know-how in steel making gained over four decades, SAIL's Consultancy Division (SAILCON) at New Delhi

offers services and consultancy to clients world-wide. SAIL has a well-equipped Research and Development Centre for Iron and Steel (RDCIS) at Ranchi which helps to produce quality steel and develop new technologies for the steel industry. Besides, SAIL has its own in-house Centre for Engineering and Technology (CET), Management Training Institute (MTI) and Safety Organization at Ranchi. Our captive mines are under the control of the Raw Materials Division in Kolkata. The Environment Management Division and Growth Division of SAIL operate from their headquarters in Kolkata. Almost all our plants and major units are ISO Certified

Major Units

Integrated Steel Plants:

- Bhilai Steel Plant (BSP) in Chhattisgarh
- Durgapur Steel Plant (DSP) in West Bengal
- Rourkela Steel Plant (RSP) in Orissa
- Bokaro Steel Plant (BSL) in Jharkhand
- IISCO Steel Plant (ISP) in West Bengal

Special Steel Plants:

- Alloy Steels Plants (ASP) in West Bengal
- Salem Steel Plant (SSP) in Tamil Nadu
- Visvesvaraya Iron and Steel Plant (VISL) in Karnataka

Ferro Alloy Plant:

- Chandrapur Ferro Alloy Plant

Subsidiary:

- SAIL Refractory Company Limited

Joint Ventures:

- **NTPC SAIL Power Company Pvt. Limited (NSPCL):** A 50:50 joint venture between Steel Authority of India Ltd (SAIL) and National Thermal Power Corporation Ltd (NTPC Ltd); manages SAIL's captive power plants at

Rourkela, Durgapur and Bhilai with a combined capacity of 814 megawatts (MW).

- **Bokaro Power Supply Company Pvt. Limited (BPSCL):** This 50:50 joint venture between SAIL and the Damodar Valley Corporation (DVC) is managing the 302-MW power generating station and 660 tonnes per hour steam generation facilities at Bokaro Steel Plant

Ownership and Management:

The Government of India owns about 80% of SAIL's equity and retains voting control of the Company. However, SAIL, by virtue of its 'Maharatna' status, enjoys significant operational and financial autonomy.

Bokaro Steel Plant

Bokaro Steel Plant (BSL), the fourth integrated plant in the Public Sector, started taking shape in 1965 in collaboration with the Soviet Union. It was originally incorporated as a limited company on 29th January 1964, and was later merged with SAIL, first as a subsidiary and then as a unit, through the Public Sector Iron & Steel Companies (Restructuring & Miscellaneous Provisions) Act 1978. The construction work started on 6th April 1968.

The Plant is hailed as the country's first Swadeshi steel plant, built with maximum indigenous content in terms of equipment, material and know-how. Its first Blast Furnace started on 2nd October 1972 and the first phase of 1.7 MT ingots steel was completed on 26th February 1978 with the commissioning of the third Blast Furnace. All units of 4 MT stage have already been commissioned and the 90s' modernization has further upgraded this to 4.5 MT of liquid steel.

A new hydraulic coiler has been added and two of the existing ones revamped. With the completion of Hot Strip Mill modernization, Bokaro is producing top quality hot rolled products that are well accepted in the global market.

Bokaro is designed to produce flat products like Hot Rolled Coils, Hot Rolled Plates, Hot Rolled Sheets, Cold Rolled Coils, Cold Rolled Sheets, Tin Mill Black Plates

(TMBP) and Galvanized Plain and Corrugated (GP/GC) Sheets. Bokaro has provided a strong raw material base for a variety of modern engineering industries including automobile, pipe and tube, LPG cylinder, barrel and drum producing industries Bokaro Steel is working towards becoming a one-stop-shop for world-class flat steel in India. The modernization plans are aimed at increasing the liquid steel production capacity, coupled with fresh rolling and coating facilities. The new facilities will be capable of producing the most premium grades required by the most discerning customer segments.

STEEL MELTING SHOP

There are two L.D Converters in this shop each of 300 T capacities. SMS-II differs with SMS-I mainly because of blowing process and gas recovery system. Capacity of SMS-II is more than 3.5 MT of liquid steel. At present, mainly Killed steels are produced in the shop. SMS-II consists of following units

- Mixer section
- Converter section.
- Magnetic yard.
- Slag yard.
- Pit side.
- Gas cleaning plant

Mixer section

The section has two Mixers of 2500T capacity each. Mixers are of inactive type. Out of five burners, two each are located in side walls while one IS on the discharging spout. Mixer tilting is done with a rack and pinion mechanism and SF loads are lifted and metal charging into the Mixer is done by two cranes of 180/50T capacity. Metal from Mixer to the converter zone IS supplied by electrically driven Hot Metal transfer car [HMTC].

Table 1 [1]

Mixer diameter	*9.8 meter*
Mixer length	*12.89 meter*
No. of burners	*5*
No. of weigh bridges	*2*
Weigh bridge capacity	*500 T*

Converter section

There are two Converters of 300T capacity each with fixed bottom. Technical characteristics of the converters are given below

Table 2 [1]

No. of converters	*2*
Capacity	*300T*
Specific volume of converter 1	*0.84 m3/T*
Specific volume of converter 2	*0.69 m3/T*
Displacement volume of converter	*267 m3*
Converter lining wt.	*710 T*
Lining thickness	*900 mm*
Height of converter	*10770 mm*
For tilting the converter	*12 DC Motors (6 on each side)*

The motors are there in hanging position. Minimum no of running motors required for tilting the converter is SIX i.e., three on each side. For absorbing shock and jerk during tilting, hydraulic holding device has been provided in converter tilting mechanism.

Magnetic yard

Magnetic yard is used for unloading scrap supplied by SSI and other areas of plant and for supplying of weighed quantity of scrap to converter. It has got three magnet cranes of 30T capacity each. Magnetic yard has two weigh bridges of 230T capacity each, two scrap transfer cars and 12 scrap boxes.

Slag yard

Slag yard complex has three sections

- Slag bay or CD bay
- Open pit
- Slag yard

A) Slag bay or CD bay: Here slag pot from SPTC is unloaded and placed on slag car and supplied to SPTC for deslagging, the loading pots on cars are taken to slag yard by locomotives.

B) Open pit: This is an open space made for slag pot dumping. The pit is cleaned by shovel and dumpers by O. G

C) Slag yard: This is in-house slag yard provided with three cranes and both side with rail approach. Crane #1 has got 100T hook capacity for lifting jam and pots, other two cranes Crane #3 has got magnet and Crane #2 has grab for loading of muck and slag to dumpers. Here the slag pots are hammered by ball with the help of crane to make them fully empty.

Pit side

Pit side consists of two teeming platforms and two teeming cranes of 450/100/16T capacity. It has got eighteen teeming ladles with slide gate system in the bottom. This section can be divided into two bays.

A) Service Bay where ladle relining and preparation of slide gate are done. Sometimes ladle is also prepared in this bay. This bay has two service cranes of 125/30T capacity. There are four gas burners for heating the ladles.

B) Teeming Bay is used for ladle preparation.

Gas cleaning plant

Gas Cleaning Plant widely known as GCP is meant for treating the gases generated from the converter. It consists of hood, skirt, stack and down take, all fabricated of steel tubes. The gases are cooled while they pass through this system. On the way, they are cleaned and then sucked by ID fan into chimney or to Gas Storage Holder. On an average 20,000 -25,000 Nm3 of converter gas can be stored in every heat. This

gas is used by mixing in coke oven gas and in power plant boilers.

CONTINUOUS CASTING SYSTEM

Introduction

In continuous casting, the molten steel from the steelmaking operation or ladle metallurgy step is cast directly into semi-finished shapes (slabs, blooms, and billets). Continuous casting represents a tremendous savings in time, labour, energy, and capital. By casting the steel directly into semi-finished shapes, the following steps are eliminated ingot teeming, stripping, & transfer to soaking pits and primary rolling. Continuous casting also increases yield and product quality. Continuous casting shop at BSL is provided with a SRU, Slab Caster, Tundish Preparation area, Slab yard and RERS (Replaceable equipment repair shop).

Working

Liquid steel is tapped into the ladle from the convertor. After undergoing refining treatments, at SRU and arriving at the correct temperature, the ladle is transported to the casting machine. From the ladle the hot metal is transferred via a refractory shroud to tundish. The tundish not only acts as a reservoir of metal to feed the casting machine while ladles are switched, but also regulates the metal feed to the moulds.

Metal is fed from the tundish through Submerged Entry Nozzle (SEN) into the copper mould. The mould is water-cooled and oscillates vertically to prevent the metal sticking to the mould walls. Granulated mould fluxes are also added to the metal in the mould to prevent sticking to the mould walls, and to trap any slag particles, that may still be present in the metal and bring them into the slag. In the mould, a thin shell of metal next to the mould wall solidifies and is, now called strand, exits the base of the mould, the bulk of metal within the walls of the strand is still molten. The strand is immediately supported by closely-spaced, water cooled rollers; these act to

support the walls of the strand against the ferro-static pressure of the still solidifying liquid within the strand. To increase the rate of solidification, the strand is also sprayed with large amounts of water as it passes through the segments. Final solidification of the strand may take place as the strand passes through straightening rolls and withdrawal rolls. Finally, the strand is cut into required slab lengths by travelling oxyacetylene torches, and is marked for identification. After the casting billet is straightened, it is transferred by a roller table for manual flame cutting. When the billets are cut into originally calibrated sizes, the billet segments are delivered by the rolling conveyor to billet exit roller table. The rolling conveyor system is made up of several roller racks, arranged with free roll, billet exit rolling device and billet exit roller bed on it. Each free roll or billet exit roll is driven by its own motor and reducer through the sprocket and chain. Finally, the slab is transferred to the fixed position by rolling conveyor.

Facilities in the Caster

1. **Turret:** Modern ladle handling turret with high-speed rotation has been provided. This is butterfly type and can be rotated electrically as well as pneumatically. The ladle is lifted or lowered hydraulically as required. [1]

2. **Tundish:** Tundish not only feeds both the strands with the liquid steel through the Submerged Entry Nozzle (SEN), but acts as an intermediate reservoir which helps in keeping the casting continued during ladle changing. At BSL cold board tundish with basic (MgO) board as working lining is used for casting. Bigger volume tundish with an overflow level of 55T allows more well time of steel in tundish resulting in flotation of non-metallic inclusions in tundish.

3. **Hydraulic Shroud Manipulator:** Shroud is used to shroud the steel flow from ladle to tundish so that liquid steel does not come in contact with air. Hydraulic shroud manipulator fixes the shroud to collector nozzle of ladle at a constant pressure of 50 to 60 bar during either lifting or lowering. Argon gas is purged at the joint so as not to allow air getting sucked in with the steel.

4. **Mould**: Mould is the heart of caster where the solidification process starts. A little difference may affect the productivity or quality of cast slabs. At BSL straight mould is used and is made of copper, with 900 mm length & 2000 mm width. The cooling medium is soft water i.e., a closed loop cooling system. The main advantages of the straight mould are:

- Better quality of the slab through flotation of non-metallic inclusions.
- Uniform contact with shell.
- Longer life and less replacement time.

5. **Tundish Slide Gate System:** Slide gate systems are fitted at the bottom of the tundish and they serve the important function of regulating the metal flow rate into the mould. In Bokaro our tundishes are provided with slide gate (3 plate), system. The main benefits of this system are ease of operation & better control of flow of steel. This system needs a cleaner and better-quality steel for longer casting sequence.

6. **Auto Mould Level Controller (AMLC):** It has been established that mould level fluctuation is highly detrimental to quality of slab as well as productivity by increasing the probability of break-out. We use an eddy current based AMLC which controls the level up to + 3 mm which is no doubt the best to control the level. The effect of AMLC has been reflected in quality of surface of slabs.

7. **Continuous Bending:** The slab after solidification from a straight mould is bent continuously in a bender to adjust the slab to the bow region where the radius of caster is 8 m. the bender has 15 set of non-driven rolls which support the strand and enhances the solidification process by the air mist cooling.

8. **Segmented Guide:** Caster has 12 segments to guide the strand. These 12 segments are divided into 5 Bow, 2 straightener and 5 horizontal segments. Except for segments 9 and 11 all segments have 2 driven and 12 non driven rolls. This segmented design leads to:

- Continuous support structure ensuring a strand guide without misalignment.
- Low pitch for reducing bulging and split rolls to avoid roll bending.
- Easy alignment and easy preparation of segments.

- Internally cooled rolls for better roll life

9. **Secondary Cooling:** Secondary cooling is cooling which cools the strand in the segments. The rate of heat extraction not only affects the quality of slabs but also segment life. Control of cooling is the most important process parameter in continuous casting. Secondary cooling in BSL caster is of two types:

10. Air mist cooling is provided in critical region of metallurgical cooling. For the precise control of quality, cooling has been divided in eight zones out of which 5 are of air mist and 3 are of spray.

11. Spray cooling is mainly in mould and straightener and horizontal segments

12. **TCM and De-Burrer:** Slab is cut into ordered length by Propane Torch Cutting Machine after it comes out of the segments. Because of torch cutting, burr arises on both ends of slabs which causes difficulties during further processing, affecting the quality of end product. The burr is removed by series of symmetrical hammers.

13. **Spray Marker:** Identification of slabs is next most important factor after the slab is produced. In order to have clear identification, a spray marker of 20 characters has been provided in each strand which uses Al2O3 powder to give a neat and correct marking.

14. **Roll Gap Checker:** Roll gap adjustment and curvatures control within tight tolerances for maintaining uniformity in the containment pass are critical. Non-uniformity in pass line results in strand bulging, formation of surface or internal cracks. Roll gap checker measures roll gap, bend, roll rotation and alignment etc. This helps us to analyse exact condition of machine.

15. **BOPS:** BOPS stands for Break Out Pre-detection System. It is an intelligent way to detect potential breakouts of molten metal by using the temperature trend within the casting mould based on fuzzy logic.

Features of CCM (Continuous Casting Machine)

Table 3 [1]

Type of machine	*Low head machine with straight mould and segmented strand guide.*
Length of mould	*900 mm.*
Number of strands	*2 X 2*
Cooling Bow Radius	*8 meters.*
Machine speed	*1.9 /minutes (MAX).*
Cooling	*Air-mist Cooling*
Casting Size	
Thickness	*225 mm.*
Width	*950 - 1850 mm.*
Length	*9 -10.5 meters.*
Others	
Metallurgical length	*29.7 meters.*
Dummy bar	*Top Feeding.*
Cutting System	*Torch Cutting (Acetylene).*
Average Heat Size	*275 T Tundish*
Capacity	*50 T*

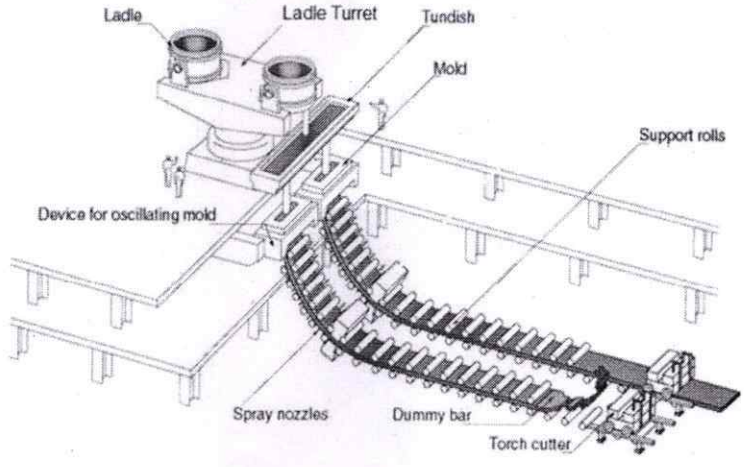


Figure 1: Two- strand continuous slab caster

SLAB CONVEYORING SYSTEM

Introduction

Iron and steel production is a multistage process. A slab yard serves as a storage buffer between the continuous casting stage and the steel rolling mill. Slabs from continuous casting are stacked in the yard to await rolling. When implementing the rolling production schedule, slabs need to be picked up from the slab yard one by one according to the scheduled rolling sequence, heated in the heating furnace and then rolled. There are usually a number of suitable candidate slabs in the yard satisfying the requirement for each rolling item.

Slab Yard: It Mainly handles the slabs for dispatch to the Hot Strip Mill. Apart from this the slab yard provides the slab to RCL for slab inspection. It is also required for the purpose of supplying to the external customers. The total slab yard area is divided into stacks and further piling is done in a particular manner with 4 slabs in single pile.

Layout of Slab Conveyoring System

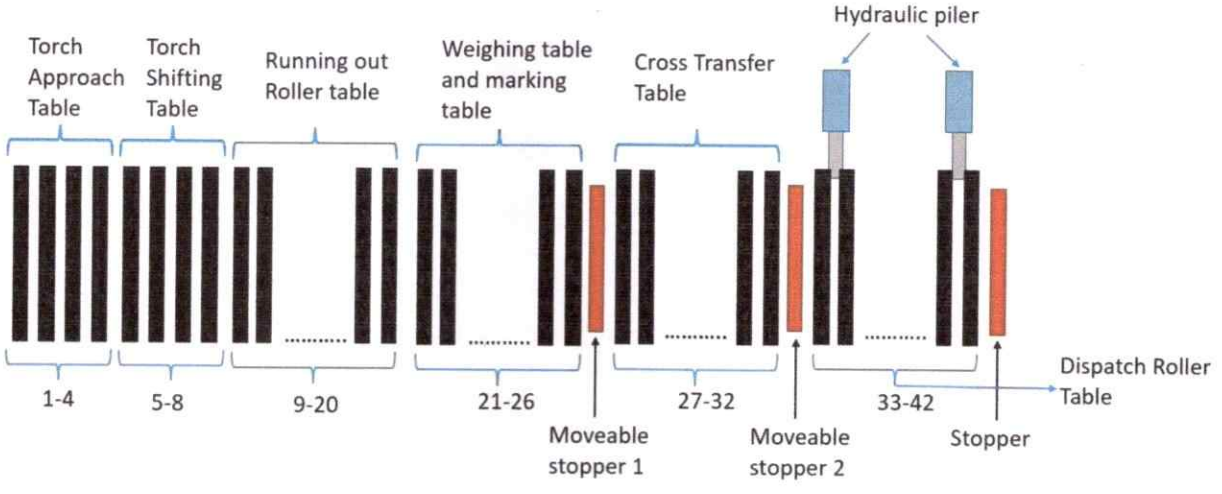


Figure 2: Layout of slab conveyor

Torch Approach Table: Torch approach table consist of 4 rollers it is directly connected to the segment. The distance between these rollers is comparatively less than other tables, to support the slab in more effective way as the slab is not completely solidified and have tendency to hog. Some refractories are also used in

this table. It is called torch approach table because after this table, TCM (Torch cutting Machine) is attached for cutting the slab

Torch Shifting Table: Torch shifting table is attached after TAT. This table is having one degree of freedom and is not rigidly fixed i.e., it can move in forward and backward direction. It helps to prevent the rollers from getting cut by the torch cutting machine. All the cutting process of the slab is done in this table only. Further if undercut problem of slab arises then it will be sorted by lancing.

Weighing Table: Measuring the weight of slab is very important for inspection and quality of the slab. Measurement of weight is done simultaneously during the process of marking with the help of load cells.

Marking Table: Identification of slabs is next most important factor after the slab is produced. In order to have clear identification, a spray marker of 20 characters has been provided in each strand which uses Al_2O_3 powder to give a neat and correct marking.

Cross Transfer Table: We need to transfer the slab from one conveyor to the adjacent one since the two slab conveyor lines are not having the same length. For this purpose, hydraulics is used to lift the slab on a platform and steel ropes on drums which driven by motors are used to lateral motion of slab.

Dispatch Roller Table: DRT is the final stop for the slab, from here with the help of hydraulic pushers, the slabs are pilled in a group of 4 and ready for dispatch to HSM (Hot strip mill).

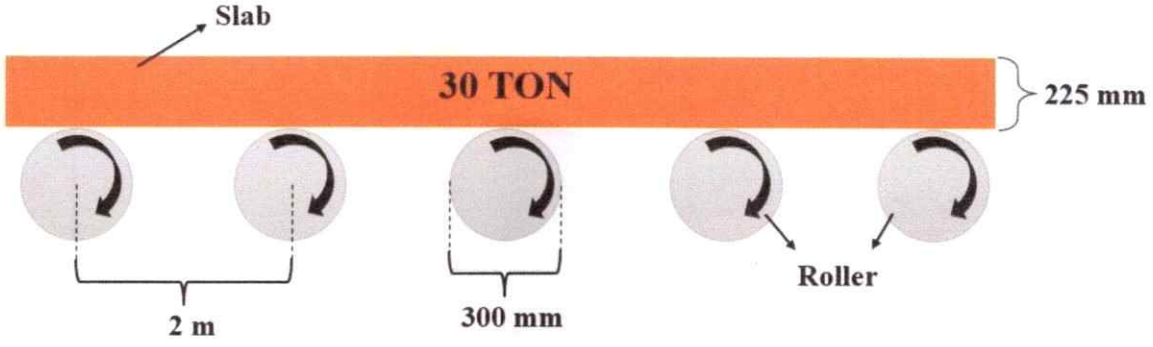
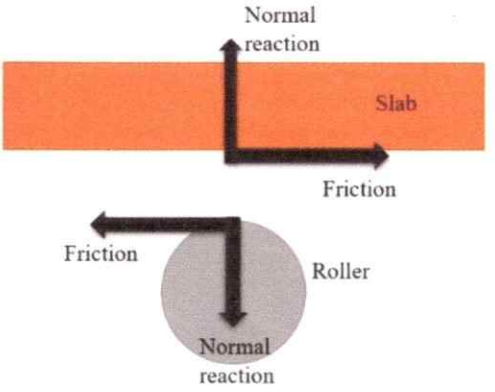


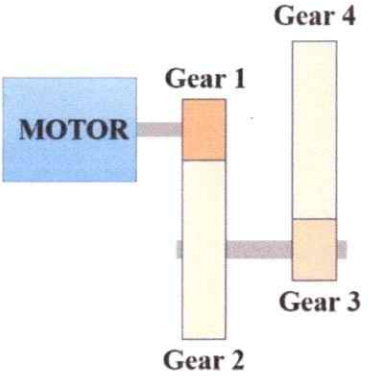
Figure 3: Slab roller schematic diagram

Calculation



Free Body Diagram

We know that,
N1/N4 = T4/T1
N4 = 5.7 rev/min
Weight of slab:
ρ = 8050 kg/m3
length of slab = 10.8 m
Width of slab = 1.6m
Thickness of slab = 0.225m
Volume of slab = 10.8 *1.6*0.225
Weight of slab = ρ*vol = 31298kg
Distance between two rollers = k = 2m
Number of rollers supporting each slab = p = length of slab/k = 10/2 = 5
Weight of slab on one roller = total weight/p = 31298/5 = 7700kg (approx.)
Weight of roller:
ρ= 8050 kg/m3
Roller Diameter = 0.3m
Volume of roller = π*r2*h
Weight of roller = ρ*vol = 1150kg
Total weight = 8850kg
Torque calculation:
Normal Reaction= Weight * g
Normal reaction = 86818.5 N
Taking the value of μ= 0.6 (reference)
Friction force = μ*Normal reaction
Friction force = 0.6 * 86818.5 = 52091.1 N
Now, τ = Friction force * radius of roller
τ = 7965 Nm
Power required to overcome this torque
Power = (2 π N τ)/60
Power = (2*π*5.7*7965)/60
Power = 4.8 KW
So, a motor with rated power of 5.5 KW can be used for the operation without failure



Gearbox layout

	Number of teeth (T)	*Rpm (N)*	*Torque*
Gear 1	*12*	*38 rev/min*	*65 Nm*
Gear 2	*70*	*NA*	*NA*
Gear 3	*18*	*NA*	*NA*
Gear 4	*80*	*5.7 rev/min*	*7965 Nm (required)*

Table 4

Challenges

- **Constant failure of Gear box pinion**: The inertial mass of the roller is high which requires high torque. This high torque is achieved with the help of 2 stage gear box. Due to continuous casting, the gears in the gearbox are running constantly and are in constant mesh. Due to this the pinion gets wear frequently and need proper attention. Changing the material to EN-24 can be a viable solution because EN24 is an excellent choice for use in heavy-duty projects and processes. It is supplied, tempered, and hardened. It is popular and widely used due to its excellent strength in numerous components, including bolts, gears, and studs. Other grades can be surfaced-hardened to create parts with improved water resistance through nitriding or induction.

Table 5 (EN-24 Material Properties) [2]

Density	7.80 g/cc
Specific Heat Capacity	*0.460 – 0.480 J/g-°C*
Tensile Strength N/mm²	*850-1000*
Yield Stress N/mm²	*680 Min*

Table 6 (Driving motor specifications)

Company	*BAUER geared motor*
Type	*AG62-12/D4A6-381-R-UB*
Rated power	*4.5 KW*
RPM	*38 rev/min*
Output torque	*65 Nm*
Phase Angle	*0.988 rad*

- **Gear Box casing fracture**: The casing is also under lots of vibrations and stress due to improper fitting and impact loading due to which it breaks.

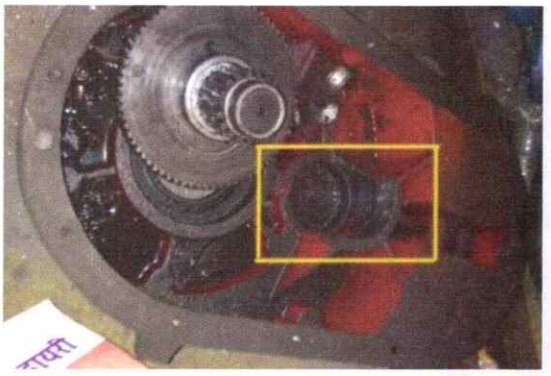


Figure 4: Damaged casing

Figure 5: Worn-out Pinion of driving motor

- **Bending of slab**: Due to improper cooling at segments there is a chance of getting bent slabs. These bent slabs may collide with the roller and cause damage.
- **Gear ratio of Gear Box**: Current gear ratio of the gear box is 20:3.
- **Overload on gearbox:** Since all rollers are not driven (Non drive), the load per drive is too high. It results in wearing and tearing of the pinion. To reduce the effective load on the pinion, all the rollers can be provided with drive. It reduces the effective load per drive and prevent frequent failure of gears.
- **Changing the designs of roller** - The inertial mass of roller is very high. There is various disadvantage of this but the prime disadvantage is that the torque required to rotate the roller is very high. To overcome this, roller with lesser diameter can be used in which multiple discs are mounted. It will reduce the overall mass of shaft/roller and hence less torque will be required to rotate the roller. Another advantage of this design is that the effective area of contact between hot slab and roller gets reduced, due to which heat transfer by conduction will also gets reduced and less amount of coolent will be required.
- **Increase in the weight of slab:** The slab bed is designed for slabs of thickness 200mm, but due to market demand slab of thickness 225mm is also being casted which has more weight, this increases the load on individual drives and is also a reason for the constant failure of the pinions

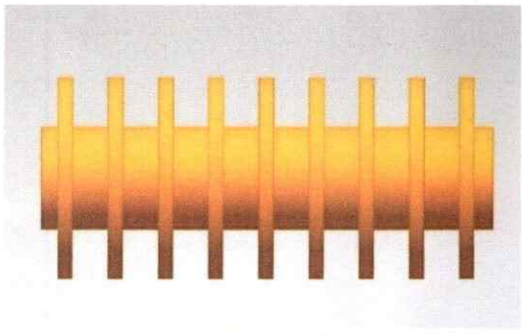


Figure 13

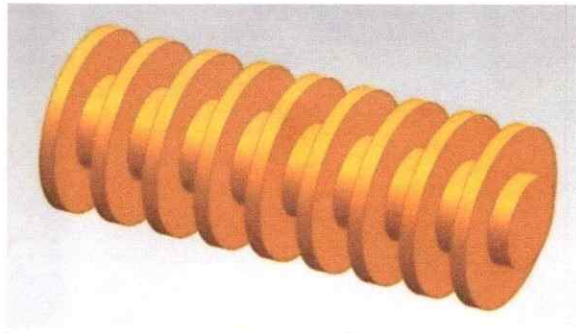


Figure 12

Figure 11

Figure 10

Figure 9

Figure 8

Figure 7

Figure 6

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[1] B. S. P. SAIL, "ORIENTATION TRAINING MANUAL".

[2] M. M. EQUIVALENTS, "EN24 Steel | Equivalent Materials & Metal Specifications," 11 DECEMBER 2020. [Online]. Available: https://redstonemanufacturing.com/en24-steel/.

BOKARO STEEL PLANT
CERTIFICATE

Director
R.D. Engineering College
Duhai, Ghaziabad

BSL URN :5911633

This is to certify that Mr./Ms. **SUNNY RAJ**

who is a student of **R.D ENGINEERING COLLEGE**

has undergone **04** weeks Practical Training in this organisation

from **12.09.2023** to **07.10.2023.**

His/Her overall performance during training was **GOOD.**

TRAINING DETAILS

Project Training - Area(s): **STUDY AND IMPROVEMENT OF SLAB CONVEYING SYSTEM**

***** This is a System generated certificate signature not required*****

A

Summer Training Report

on

Industrial training

Carried out at

Concept Machines, Baba Nagar, Meerut Road

Ghaziabad

Submitted for interim evaluation of

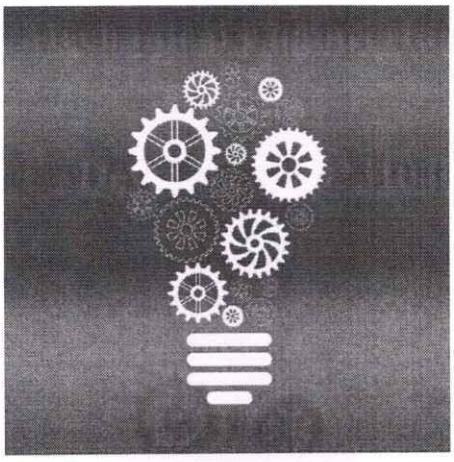
Bachelor Of Technology

in

Mechanical Engineering

By

Devinder (2002310400005)



Department Of Mechanical Engineering

RD Engineering & Technology, Muradnagar

Ghaziabad (U.P.) India- 284128

SESSION : 2023-2024

Dire
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Duhai,

ACKNOWLEDGEMENT

Firstly, I would like to thank Mr. Dhan Singh Singar, Company Director of Concept Machines, for giving me the opportunity to do summer training within this esteemed organization and giving me the technical knowledge, facilities and relevant information which guided me throughout vocational training and I am sure it will help me further in future also.

I am sincerely grateful to Mr. Raj Kumar Singh (Head of Section), Mr. Chandreshwar Yadav (Head of Assembly Department) and others, who constantly supported me and provided me the right path with industrial knowledge and technical demonstrations which helped me complete my training in the stated sections.

The hands-on experience and exposure to the intricacies of defence manufacturing have provided me with a comprehensive understanding of the industry. I am grateful for the trust placed in me and for the challenging opportunities that have helped me enhance my technical skills and problem-solving abilities.

Furthermore, I would like to acknowledge the positive work environment and the camaraderie among the team members at Concept Machines (GZB). The collaborative and supportive atmosphere fostered a sense of belonging and encouraged me to strive for excellence in my work.

I would also like to express my gratitude to Shyam Sundar Sharma (Head of Workshop Department) for his seamless coordination and assistance throughout the internship process. Their efforts ensured a smooth onboarding experience and effective communication channels.

Lastly, I would like to extend my thanks to the entire management team and the organization as a whole for providing me with this incredible opportunity. The summer internship at Concept Machines Meerut Road Ghaziabad has been a transformative experience, and I am confident that the skills and knowledge gained during this period will be instrumental in my future endeavours.

Once again, I express my deepest appreciation for the invaluable experience and the support extended to me during my internship. I look forward to maintaining a strong connection with Concept Machines Meerut Road Ghaziabad and contributing to the organization's growth in the future.

Thank you for providing me with this enriching opportunity.

Director
R.D. Engineering College
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TABLE OF CONTENT

PREFACE

Vocational learning opportunities play a critical role in skill development and employability.

The importance of vocational development can largely be summed up as the difference between theoretical knowledge vs. practical skills. When employers look for new employees to join their institution, they know that they want to find someone who has the skills to do the job well and can adapt quickly to the work environment.

Businesses spend a significant amount of money trying to onboard new employees, as they must go through a training process and anticipate that there will be a learning curve for the employee on a new job. For students who have graduated from a vocational training school, however, this situation can go a bit differently. They have the experience to list on their resume and employers know they have a significant portion of the training they need. Often they even have started building a professional network through their job placements and internships they could potentially leverage. This helps to open doors to new possibilities.

In nearly any industry, the importance of a strong network can play a direct role in finding a job and building a successful career. Connections and relationships can help people find new jobs, learn about new opportunities, and have chances to continue their education and build more career-based skills.

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CM : An overview

General Introduction

The Concept machines organisation is a partnership company this company having over 23years experience in production, testing, logistics, research, development and marketing of a comprehensive product range in the area of land, see and air systems. The patronage we receive both in India and abroad speaks of the quality of products and services.

The machines manufacturing industry plays a crucial role in our modern society. It encompasses the production of various types of machinery, equipment, and tools that are essential for different sectors like construction, transportation, agriculture, health-care, and many others. This industry involves the design, development, and fabrication of machines that automate processes, increase efficiency, and enhance productivity.

Machines manufacturing involves a wide range of activities, such as research and development, engineering design, prototype creation, manufacturing, assembly, installation, and maintenance. It requires a multidisciplinary approach that combines expertise in fields like mechanical engineering, electrical engineering, computer science, and materials science.

The machines manufacturing industry is driven by continuous advancements in technology, which has led to the development of sophisticated machines that are faster, more precise, and capable of performing complex tasks. Automation, robotics, artificial intelligence, and internet connectivity have become integral parts of machine design, enabling increased speed, accuracy, and reliability.

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Vision

- Innovation: Strive to constantly push the boundaries of technology, leading the industry with cutting-edge developments in CNC and automatic machine solutions.
- To train and motivate personell.
- Customer Satisfaction: Prioritize customer needs and satisfaction by providing tailored solutions, excellent customer service, and ongoing technical support to ensure their success.
- To continuously improve quality
- To improve operational efficiency and communication by extensive use of information technology
- Adaptability and Customization: Offer flexible and customizable machine solutions to meet the unique requirements of diverse industries and enable seamless integration into existing production lines.
- Continuous Improvement: Embrace a culture of continuous improvement, constantly seeking feedback, incorporating new technologies, and refining our products to stay at the forefront of the industry.

Mission

Production of CNC Machines and Others Parts or Equipment.

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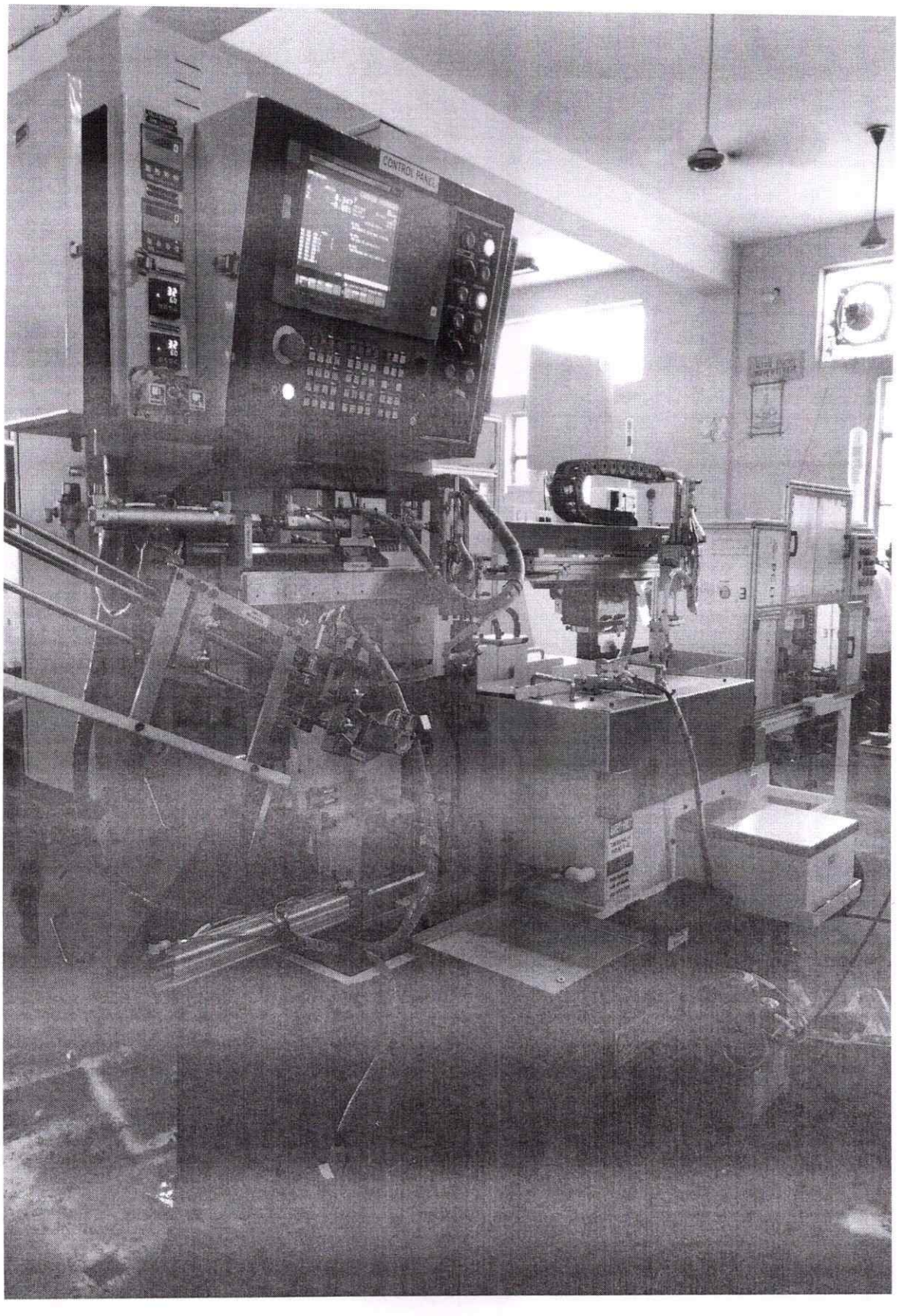

CNC MACHINE

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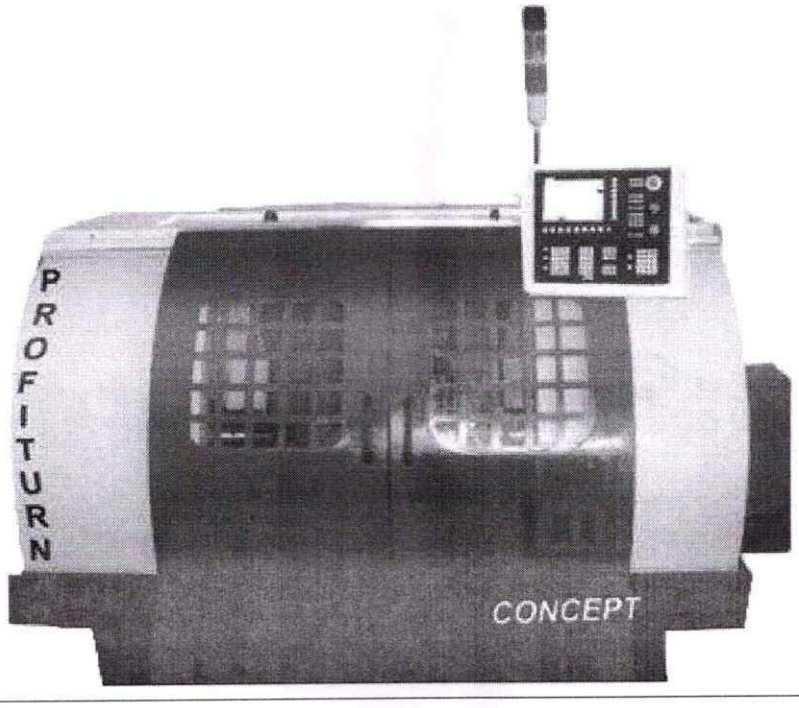
Products



Twin Head Cnc Chucker

Specification

- Maximum Swing Dia : 160 mm
- Maximum Turning Length : 100 mm
- Slide Movement (X / Z Axis) : 300 / 300 mm
- Chuck Dia Maximum : 165 mm
- System : FANUC
- Tailstock : N. A.
- Turret : N. A.
- Automation : Optional

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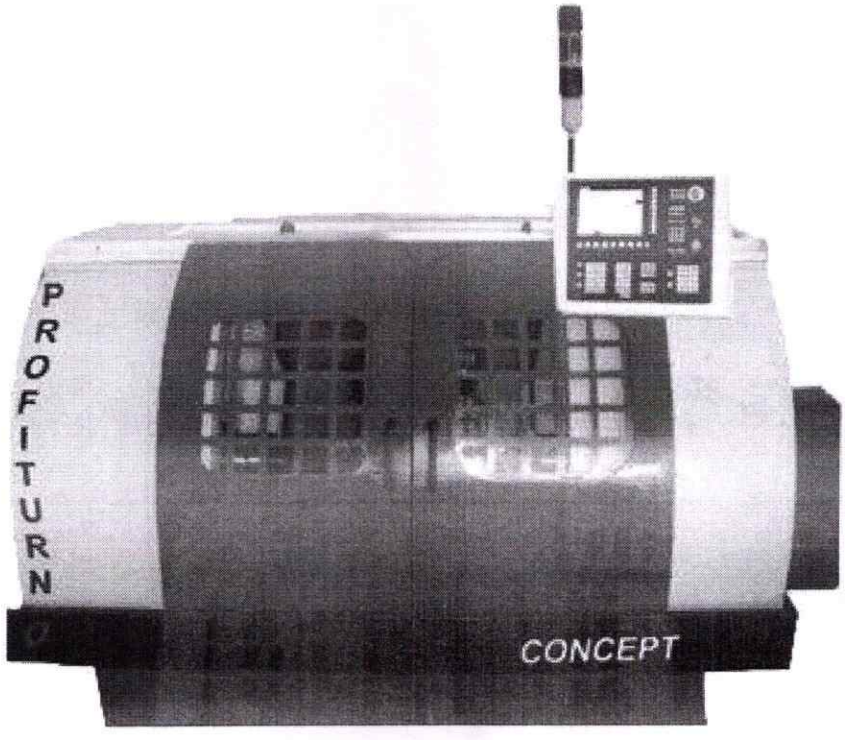

Cnc Lathe/Chucker

Specification

- Maximum Swing Dia : 210 mm
- Maximum Turning Length : 400 mm
- Slide Movement (X / Z Axis) : 140 / 400 mm
- Chuck Dia Maximum : 200 mm
- System : FANUC
- Tailstock : Hydraulic
- Turret : Standard

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General terms in machining:

1. Fixture

1.1. Main purpose is to hold the job.

1.2. Bigger in size compared to jig.

1.3. E.g., for special work

2. Jig

2.1. Main purpose is to guide the tool by restricting the tool's movement.

2.2. Smaller than Fixture.

2.3. E.g., Drill

3. Gauge

3.1. Used to check the measurements of the components.

3.2. Used in mass production.

3.3. It is used in place of Vernier Callipers or micrometre for saving time.

3.4. Types of Gauges:

3.4.1. Plug Gauge:

3.4.1.1 : For internal diameter measurements.
3.4.1.2 : It has two ends: 'GO' end diameter and 'NO GO' end diameter.
3.4.1.3. 'GO' end is bigger in size (NOT in diameter) and 'NOGO' is smaller in size. (This is helpful in identifying when all the inscription is erased.)

Direc
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3.4.1.4. 'GO' end diameter should pass through the hole and 'NO GO' end should not pass through the hole/job. Then the job can be considered to be perfect.

3.4.2. Filler Gauge: It is used to measure the gap between two parts.

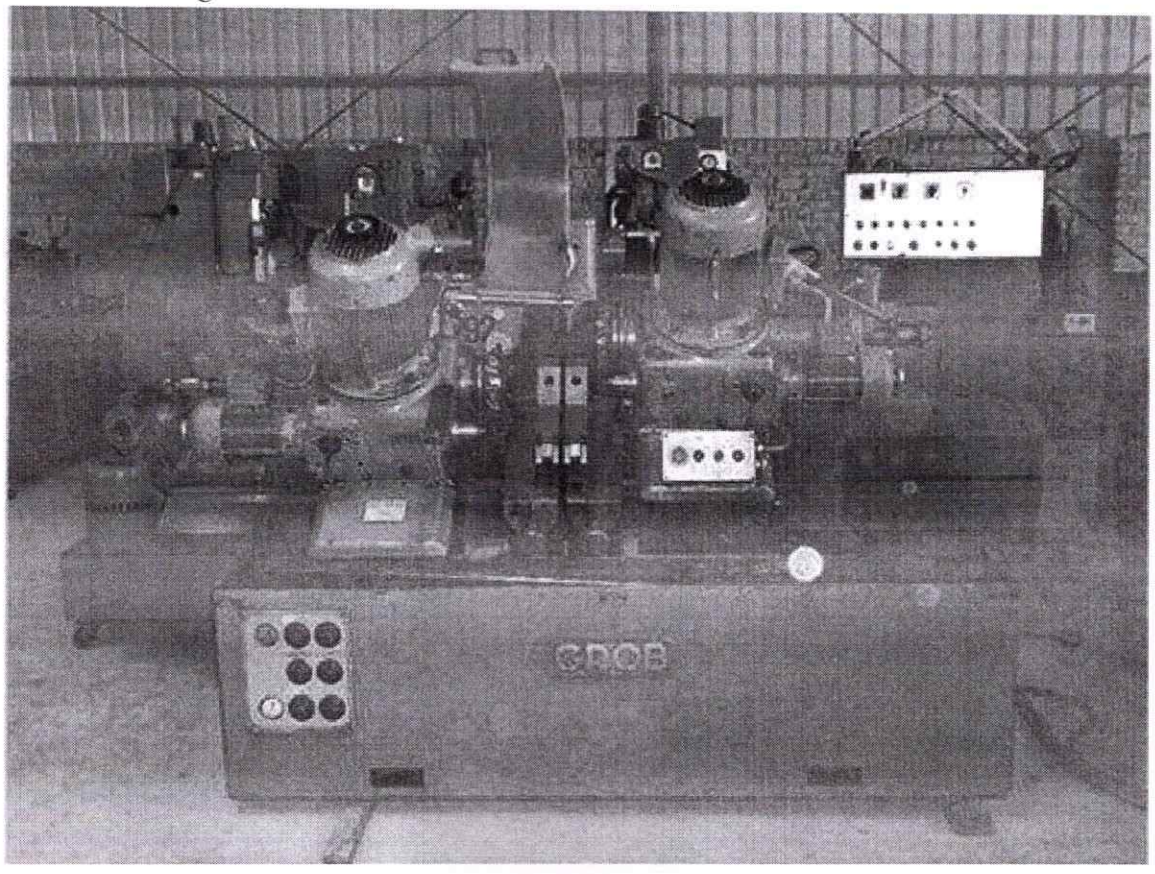
3.4.3. Thread Gauge: It is used to measure the pitch of the thread.

3.4.4. Snap Gauge

3.4.5. Angle Gauge

3.4.6. Taper Gauge

C



Center & Facing Machine

Specification

- **Max. job length : 400 mm**
- **Min. job length : 70 mm**
- **Max. Job dia. : 30 mm**
- **Center Drill Dia (dia on chamfer) : 10 mm**

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HRD

This section works towards familiarization about factory activities, its history and other useful information. It also briefs about the products manufactured or assembled in this factory. The department speaks about the aim to equip our machine with modern and supreme quality of others products to be used in the Company It also provides with the general information of various sections and foundries with in the factory premises.

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Safety

The department focuses on the safety of the workers and officials working in the factory. This involves mandatory use of helmet, specs and shoes whenever within the production field. The workers are also advised to use mask to prevent any type of dust and dirt related issues also they must always work in the area away from the guarding lines.

The factory celebrates safety week in the month of march. This department is also responsible for checking on the water, noise and air quality of the factory. It also conducts mock drills from time to time to spread awareness among the staff and workers against any type of accident. The department has classified the types of injury that can happen to any factory member into three categories viz,minor, major and fatal.

Minor injury involves the accident where the worker is fit to join back the factory within 48hours of the accident. Major involves bigger accidents such as amputation where the worker needs more than 48 hours. Fatal includes death of any worker.

It works on OHSMS(Occupational health and safety management system) and EMS(Environmental management system). It also involves yearly or half-yearlt medical tests of the workers.

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LMC

This section involves operations of different machines and manufacturing of tools and fixtures.

The VMCs are the Vertical milling center machine. Vertical Machining Centers, also known as Vertical Milling Machines, create holes in flat parts. The VMC technology is favored when three-axis work is done on a single face, such as in-mold and die works.
Multiple adjustments are available on VMCs. For example, on the worktable, there are numerous angles of approach and rotating and other positioning devices. The incorporated computerized controls enable automation, repeatability, tool selection/change, and contour control.
These new CNC machines raised the productivity of the "milling" machine to unprecedented heights, giving rise to the term VMC (Vertical Machining Center).
Mainly VMC Machines have only three axis that move on x, y and z axises. On Standard VMCs the cutter stays in vertical directions. To increase the benefits of VMC additional axis can be added.
The VMC used in this section are computerized and works on the programs and data fed to it.

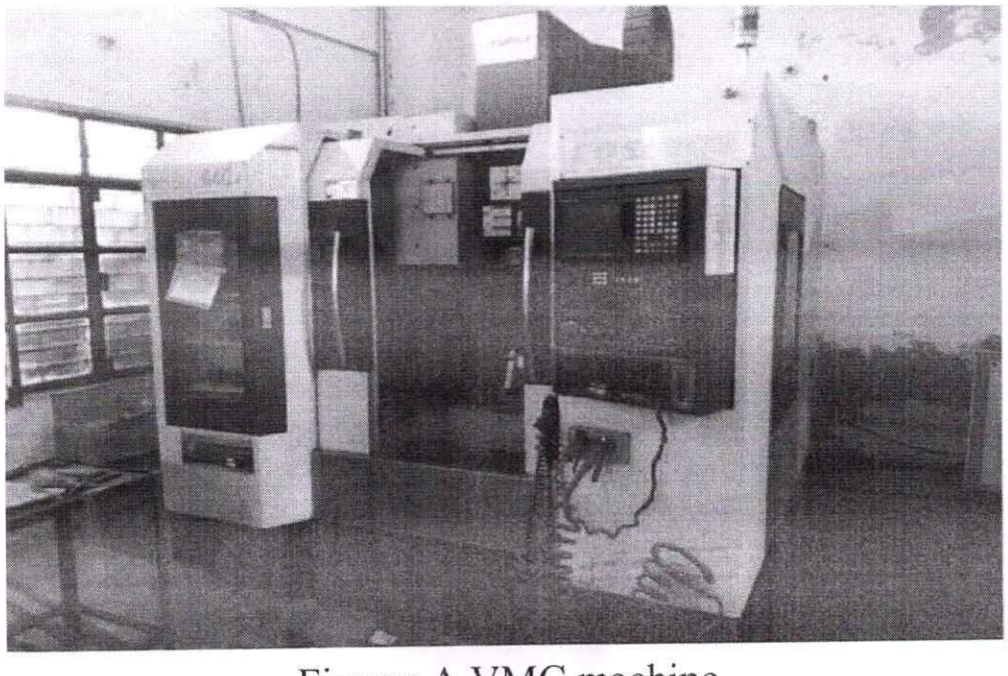

Figure: A VMC machine

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Machines in LMC:

i. Centre Lathe M/C

ii. Vertical Milling M/C

iii. Horizontal Milling M/C

iv. Radial Drilling M/C

v. Surface Grinder M/C

vi. Tool and Cutter Grinder M/C vii. Internal and External Grinder M/C

vii. Jig Boring M/C ix. Thread Grinding M/C

viii. Profile Grinding M/C

ix. CNC Drilling and Tapping M/C

x. Hardness Testing M/C

Production:

i. Tool

ii. Gauges

iii. Jig and Fixtures

iv. Pattern

v. Core Box

vi. Ring

vii. Lug

viii. Filling Plug

ix. Detonator

x. AC Plug

xi. Container

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SMS

This section involves various machining processes of Grey iron casting programming and working of CNC machines and conventional machines in the section small cell of moltres are made by the help of CNC.

This section involves various machining processes of Grey iron casting programming and working of CNC machines and conventional machines in the section small cell of moltres are made by the help of CNC this section uses machines such as CNC Central ate machine drilling machine and paint machine the products manufactured in the section are these products are produced through different populations conducted such as scraping rough profile in nose threading tail threading frontal cavity coating hard finishing vanishing sand blasting air testing Taylor nose parting etc and also rest prevention 81 MM pwt motor is a smoke type screening ammunition is used in combat field to achieve a dense lock screen for Facilities tactical deployment of fruits and screening.

Computer numerical control CNC is the automation of machine tools by means of computers executive free program sequence of machine control commands this is a contrast to machines that are manually control by hand Wheels on leavers or mechanical automated I cams alone in modern CNC systems the design of a mechanical part and its manufacturing program is highly

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automated the parts mechanical dimensions are define using Computer aided design CAD software and then translated into manufacturing derived Computer aided manufacturing cam software this resulting directives are transform by post processor software into the specific command necessary for a particular machine 2 and then into the CNC machine require the use of a number of different tools 12 etc modern machines of multiple tools into a single cell in other installations a number of different machines are used with an external controller and human or robotic operators that move the component from machine to machine and either case the series of steps needed to produce any part is highly automated and produces a part that closely matches the original cad.

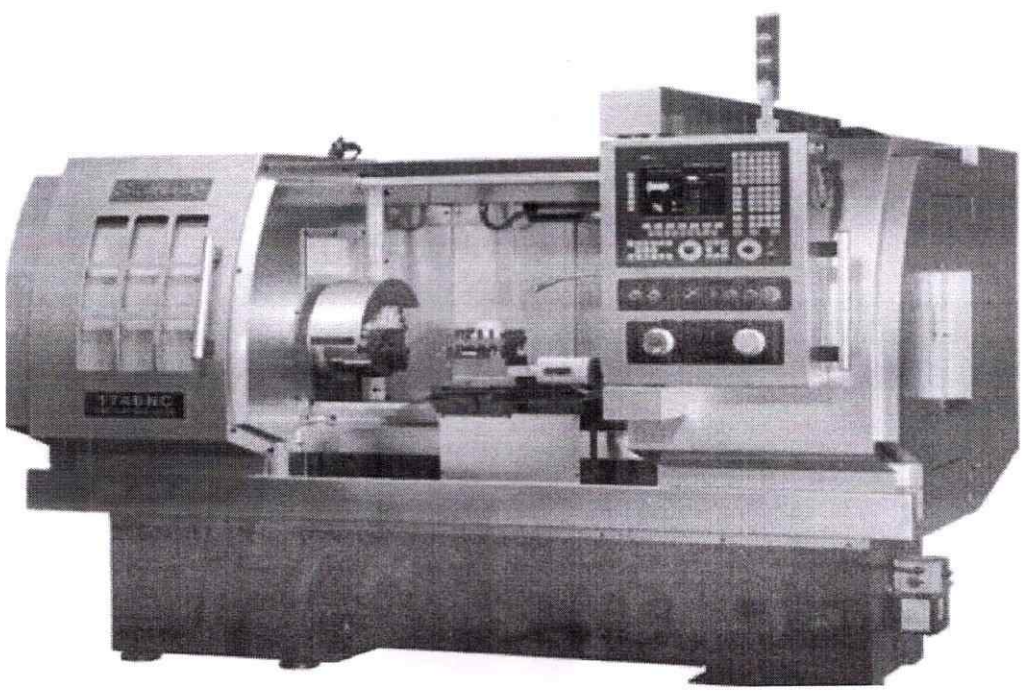

Figure: A CNC machine

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Facing

Facing is the machining of the end surfaces and shoulders of a workplace. In addition to squaring the ends of the work, facing provides a way to cut work to length accurately. Generally, only light cuts are required since the work will have been cut to approximate length or rough machined to the shoulder .

Turning

Turning is the machining of excess stock from the periphery of the work piece to reduce the diameter. In most lathe machining operations requiring removal of

large amounts of stock, a series of roughing cuts is taken to remove most of the excess stock then a finishing cut is taken to accurately size the workpiece.

Rough Turning

When a great deal of stock is to be removed you should take heavy cuts to complete the job in the least possible time, this is called rough turning. Select the proper tool for taking a heavy chip. The speed of the work and the amount of feed of the tool should be asked as the tool will stand.

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Boring

It is the machining of holes or any interior cylindrical surface. The piece to be bored must have a drilled or cored hole, and the hole must be large enough to insert the tools. The boring process merely enlarges the hole to the desired shape or size. The advantage of boring is that a true round hole is obtained and two or more holes of the same or different diameters may be bored at one setting, thus ensuring absolute alignment of the axis of the holes.

Taper

A taper is a gradual decrease in the diameter of a piece of work toward one end. The amount of taper in any given length of work is found by subtracting the size of the small end from the size of the large end. Taper is usually expressed as the amount of taper per foot of length or taper per inch of length.

CONCLUSION

In conclusion, my summer internship at Concept MachineMeerut Ghaziabadhas been an immensely enriching and technically immersive experience. Throughout my tenure, I had the privilege to work alongside a highly skilled and knowledgeable team, whose guidance and expertise have significantly contributed to my professional development.

The skills, knowledge, and experiences gained during this internship have undoubtedly laid a strong foundation for my future endeavours. I am confident that the insights gained into the intricate workings of an Concept Machine , coupled with the hands-on technical skills acquired, will greatly benefit my career progression.

-Devender

Director
R.D. Engineering College
Duhai, Ghaziabad

A
Internship Training Report

ON

MACHINE LEARNING

At

NTERNS LITE

Submitted for interim evaluation of

Bachelor of Technology

in

Electronics & Communication Engineering

By

SHIVAM (2002310310021)

Department of Electronics & Communication Engineering

RD Engineering College, Ghaziabad (U.P.) India

SESSION: 2023

Director
R.D. Engineering College
Duhai, Ghaziabad

ACKNOWLEDGEMENT

Firstly, I would like to thank Mr. Company Director of Machine learning Design, for giving me the opportunity to do internship training within this esteemed organization and giving me the technical knowledge, facilities and relevant information which guided me throughout vocational training and I am sure it will help me further in future also.

I am sincerely grateful to Mr. Anoop Mittal Head of Section), Mr.Raghav Kumar (Head of Software Department) and others, who constantly supported me and provided me the right path with industrial knowledge and technical demonstrations which helped me complete my training in the stated sections.

The hands-on experience and exposure to provided me with a comprehensive understanding of the industry. I am grateful for the trust placed in me and for the challenging opportunities that have helped me enhance my technical skills and problem-solving abilities.

Lastly, I would like to extend my thanks to the entire management team and the organization as a whole for providing me with this incredible opportunity.

Once again, I express my deepest appreciation for the invaluable experience and the support extended to me during my internship.

Thank you for providing me with this enriching opportunity.

- Shivam

MACHINE LEARNING

Machine learning is a subset of artificial intelligence (AI) that focuses on the development of algorithms and models that enable computers to learn and make predictions or decisions based on data. Instead of being explicitly programmed to perform a certain task, machine learning algorithms are trained on large datasets and learn patterns from the data to make predictions or decisions without being explicitly programmed for each scenario.

There are several types of machine learning algorithms, including:

1. **Supervised learning**: In this type of learning, the algorithm is trained on labeled data, meaning the input data is paired with the correct output. The algorithm learns to map inputs to outputs, allowing it to make predictions on new, unseen data.
2. **Unsupervised learning**: Here, the algorithm is given unlabeled data and is tasked with finding patterns or structure within the data. Clustering and dimensionality reduction are common tasks in unsupervised learning.
3. **Reinforcement learning**: In reinforcement learning, an agent learns to make decisions by interacting with an environment. It receives feedback in the form of rewards or penalties based on its actions and learns to maximize cumulative rewards over time.

Machine learning has numerous applications across various industries, including finance, healthcare, marketing, and more. Some common applications include image and speech recognition, natural language processing, recommendation systems, autonomous vehicles, and predictive analytics.

1. **Problem Definition**: Clearly define the problem you want to solve with machine learning. Identify the goals, stakeholders, and constraints.
2. **Data Collection**: Gather relevant data that will be used to train and evaluate your machine learning model. Ensure the data is clean, labeled (if applicable), and representative of the problem domain.
3. **Data Preprocessing**: Clean and preprocess the data to remove noise, handle missing values, and normalize or scale the features as necessary. This step may also involve feature engineering to create new features that may improve model performance.
4. **Model Selection**: Choose the appropriate machine learning algorithm(s) based on the problem type (e.g., classification, regression, clustering) and data characteristics. Experiment with different algorithms and hyper parameters to find the best-performing model.
5. **Model Training**: Train the selected model(s) on the training data using appropriate techniques such as cross-validation to avoid over fitting.

6. **Model Evaluation**: Evaluate the trained models using appropriate evaluation metrics and techniques (e.g., accuracy, precision, recall, F1-score, ROC curve). Compare the performance of different models and select the best one.
7. **Model Tuning**: Fine-tune the hyperparameters of the selected model(s) to further improve performance. This may involve techniques such as grid search or random search.
8. **Model Deployment**: Once satisfied with the model performance, deploy the model into a production environment where it can make predictions on new, unseen data. This may involve integrating the model into existing software systems or deploying it as a web service/API.
9. **Monitoring and Maintenance**: Continuously monitor the performance of the deployed model in production and retrain or update it as needed to maintain accuracy and reliability.

Throughout the entire process, it's essential to document your work, communicate with stakeholders, and iterate on your approach based on feedback and new insights. Additionally, ethical considerations such as fairness, transparency, and privacy should be carefully considered at every stage of the project.

Securing a machine learning internship can be a valuable opportunity to gain hands-on experience in the field and develop your skills. Here are some steps you can take to find a machine learning internship:

1. **Identify Your Interests**: Determine your specific interests within machine learning, whether it's computer vision, natural language processing, reinforcement learning, or another subfield. This will help you target relevant internships.
2. **Build a Strong Foundation**: Ensure you have a solid understanding of fundamental concepts in machine learning, including algorithms, data preprocessing, model evaluation, and programming languages such as Python and libraries like TensorFlow or PyTorch.
3. **Develop Projects**: Work on machine learning projects to demonstrate your skills and build a portfolio. These projects could be personal projects, coursework, or participation in hackathons and competitions like Kaggle.
4. **Networking**: Network with professionals in the field through LinkedIn, professional organizations, and industry events. Attend meetups, conferences, and workshops related to machine learning to connect with potential mentors and employers.
5. **Explore Internship Opportunities**: Look for machine learning internship openings on job boards, company websites, and internship platforms. Some companies offer formal internship programs specifically focused on machine learning and AI.
6. **Prepare Your Application**: Tailor your resume and cover letter to highlight relevant skills, experiences, and projects related to machine learning. Emphasize your passion for the field and your eagerness to learn and contribute.

7. **Practice Interviewing**: Be prepared for technical interviews that may include coding challenges, problem-solving exercises, and discussions of machine learning concepts and techniques. Practice coding and whiteboard interviews, and review common machine learning interview questions.
8. **Apply and Follow Up**: Apply to internships that align with your interests and qualifications. Follow up with companies after submitting your application to express your continued interest and inquire about the status of your application.
9. **Consider Remote Opportunities**: Don't limit your search to local opportunities. Many companies offer remote internships, which can broaden your options and provide valuable experience working in a distributed environment.
10. **Stay Persistent and Positive**: Finding the right internship opportunity may take time and effort, so stay persistent and maintain a positive attitude throughout the process. Keep learning, improving your skills, and seeking out new opportunities.

MACHINE LEARNING ARCHICTURE

The architecture of a machine learning system can vary depending on factors such as the problem domain, the size and complexity of the dataset, the desired performance metrics, and the available computing resources. However, a typical machine learning architecture involves several key components:

1. **Data Collection**: The first step in any machine learning project is collecting relevant data. This may involve gathering data from various sources such as databases, APIs, sensors, or external datasets. The quality and quantity of data collected play a crucial role in the success of the machine learning model.
2. **Data Preprocessing**: Once the data is collected, it needs to be preprocessed to make it suitable for training machine learning models. This includes tasks such as cleaning the data to remove noise and outliers, handling missing values, and scaling or normalizing the features.
3. **Feature Engineering**: Feature engineering involves selecting and transforming the input features to improve the performance of the machine learning model. This may include creating new features, transforming existing features, or selecting the most relevant features for the task at hand.
4. **Model Selection**: The next step is to select an appropriate machine learning algorithm for the problem at hand. This may involve trying out different algorithms and evaluating their performance using techniques such as cross-validation.
5. **Model Training**: Once the algorithm is selected, the next step is to train the model using the preprocessed data. During training, the model learns to make predictions by adjusting its parameters to minimize a loss function.

6. **Model Evaluation**: After training, the model needs to be evaluated to assess its performance on unseen data. This involves testing the model on a separate validation set or using techniques such as cross-validation to assess its generalization ability.
7. **Hyper parameter Tuning**: Many machine learning algorithms have hyper parameters that need to be tuned to optimize the model's performance. This may involve techniques such as grid search or random search to find the best combination of hyper parameters.
8. **Model Deployment**: Once the model is trained and evaluated, it can be deployed into a production environment where it can make predictions on new, unseen data. This may involve integrating the model into existing software systems or deploying it as a web service/API.
9. **Monitoring and Maintenance**: After deployment, it's important to monitor the model's performance in production and update it as necessary to maintain its accuracy and reliability. This may involve retraining the model on new data or updating it to adapt to changing conditions.

Overall, the architecture of a machine learning system is highly iterative and involves multiple stages of data collection, preprocessing, model training, evaluation, and deployment. Collaboration between data scientists, machine learning engineers, and domain experts is often necessary to design and implement effective machine learning solutions. Additionally, the use of tools and frameworks such as Tensor Flow, PyTorch, scikit-learn, and Apache Spark can help streamline the development and deployment process.

Machine learning coding involves writing code to implement machine learning algorithms, preprocess data, train models, evaluate performance, and deploy solutions. Here are the key steps involved in machine learning coding:

1. **Setting Up Development Environment**: Install necessary libraries and frameworks for machine learning development. Common libraries include Tensor Flow, PyTorch, scikit-learn, Keras, and NumPy for numerical computing.
2. **Loading and Preprocessing Data**: Use libraries like Pandas to load and preprocess data. Preprocessing steps may include handling missing values, encoding categorical variables, scaling features, and splitting data into training and testing sets.
3. **Choosing and Implementing Algorithms**: Select appropriate machine learning algorithms based on the problem at hand (e.g., classification, regression, clustering). Implement algorithms using libraries like scikit-learn or Tensor Flow/Keras.
4. **Training the Model**: Train the machine learning model using the training data. Fit the model to the training data by calling the `fit()` method and passing the features and labels.
5. **Hyper parameter Tuning**: Optimize the model's performance by tuning hyper parameters. Use techniques like grid search or random search to find the best combination of hyper parameters.

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Duhai, Ghaziabad

6. **Evaluating Model Performance**: Evaluate the trained model's performance using appropriate evaluation metrics (e.g., accuracy, precision, recall, F1-score, ROC curve). Use libraries like scikit-learn to compute evaluation metrics.
7. **Iterating and Improving**: Iterate on the model by adjusting hyper parameters, feature engineering, or trying different algorithms to improve performance.
8. **Cross-Validation**: Use cross-validation techniques to assess the model's generalization performance. Cross-validation helps estimate the model's performance on unseen data by splitting the data into multiple subsets for training and testing.
9. **Deployment**: Deploy the trained model into a production environment. This may involve serializing the model using libraries like joblib or pickle and integrating it into an application or web service.
10. **Monitoring and Maintenance**: Continuously monitor the deployed model's performance in production and update it as necessary. Monitor for concept drift, data drift, and model degradation over time.

Here's an example of Python code for training a simple machine learning model using scikit-learn:

```
python
# Import necessary libraries
from sklearn.datasets import load_iris
from sklearn.model_selection import train_test_split
from sklearn.tree import DecisionTreeClassifier
from sklearn.metrics import accuracy_score

# Load the Iris dataset
iris = load_iris()
X, y = iris.data, iris.target

# Split the data into training and testing sets
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2,
random_state=42)

# Initialize the decision tree classifier
clf = DecisionTreeClassifier()

# Train the classifier on the training data
clf.fit(X_train, y_train)

# Make predictions on the testing data
y_pred = clf.predict(X_test)

# Evaluate the model's performance
accuracy = accuracy_score(y_test, y_pred)
print("Accuracy:", accuracy)
```

This code trains a decision tree classifier on the Iris dataset and evaluates its accuracy on a held-out test set.

A
Internship Training Report

ON

MACHINE LEARNING

At

NTERNS LITE

Submitted for interim evaluation of

Bachelor of Technology

in

Electronics & Communication Engineering

By

SHAKEEL AHMAD (2002310310020)

Department of Electronics & Communication Engineering

RD Engineering College, Ghaziabad (U.P.) India

SESSION: 2023

Director
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ACKNOWLEDGEMENT

Firstly, I would like to thank Mr. Company Director of Machine learning Design, for giving me the opportunity to do internship training within this esteemed organization and giving me the technical knowledge, facilities and relevant information which guided me throughout vocational training and I am sure it will help me further in future also.

I am sincerely grateful to Mr. Anoop Mittal Head of Section), Mr.Raghav Kumar (Head of Software Department) and others, who constantly supported me and provided me the right path with industrial knowledge and technical demonstrations which helped me complete my training in the stated sections.

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Once again, I express my deepest appreciation for the invaluable experience and the support extended to me during my internship.

Thank you for providing me with this enriching opportunity.

- SHAKEEL AHMAD

MACHINE LEARNING

Machine learning is a subset of artificial intelligence (AI) that focuses on the development of algorithms and models that enable computers to learn and make predictions or decisions based on data. Instead of being explicitly programmed to perform a certain task, machine learning algorithms are trained on large datasets and learn patterns from the data to make predictions or decisions without being explicitly programmed for each scenario.

There are several types of machine learning algorithms, including:

1. **Supervised learning**: In this type of learning, the algorithm is trained on labeled data, meaning the input data is paired with the correct output. The algorithm learns to map inputs to outputs, allowing it to make predictions on new, unseen data.
2. **Unsupervised learning**: Here, the algorithm is given unlabeled data and is tasked with finding patterns or structure within the data. Clustering and dimensionality reduction are common tasks in unsupervised learning.
3. **Reinforcement learning**: In reinforcement learning, an agent learns to make decisions by interacting with an environment. It receives feedback in the form of rewards or penalties based on its actions and learns to maximize cumulative rewards over time.

Machine learning has numerous applications across various industries, including finance, healthcare, marketing, and more. Some common applications include image and speech recognition, natural language processing, recommendation systems, autonomous vehicles, and predictive analytics.

1. **Problem Definition**: Clearly define the problem you want to solve with machine learning. Identify the goals, stakeholders, and constraints.
2. **Data Collection**: Gather relevant data that will be used to train and evaluate your machine learning model. Ensure the data is clean, labeled (if applicable), and representative of the problem domain.
3. **Data Preprocessing**: Clean and preprocess the data to remove noise, handle missing values, and normalize or scale the features as necessary. This step may also involve feature engineering to create new features that may improve model performance.
4. **Model Selection**: Choose the appropriate machine learning algorithm(s) based on the problem type (e.g., classification, regression, clustering) and data characteristics. Experiment with different algorithms and hyper parameters to find the best-performing model.
5. **Model Training**: Train the selected model(s) on the training data using appropriate techniques such as cross-validation to avoid over fitting.

6. **Model Evaluation**: Evaluate the trained models using appropriate evaluation metrics and techniques (e.g., accuracy, precision, recall, F1-score, ROC curve). Compare the performance of different models and select the best one.
7. **Model Tuning**: Fine-tune the hyper parameters of the selected model(s) to further improve performance. This may involve techniques such as grid search or random search.
8. **Model Deployment**: Once satisfied with the model performance, deploy the model into a production environment where it can make predictions on new, unseen data. This may involve integrating the model into existing software systems or deploying it as a web service/API.
9. **Monitoring and Maintenance**: Continuously monitor the performance of the deployed model in production and retrain or update it as needed to maintain accuracy and reliability.

Throughout the entire process, it's essential to document your work, communicate with stakeholders, and iterate on your approach based on feedback and new insights. Additionally, ethical considerations such as fairness, transparency, and privacy should be carefully considered at every stage of the project.

Securing a machine learning internship can be a valuable opportunity to gain hands-on experience in the field and develop your skills. Here are some steps you can take to find a machine learning internship:

1. **Identify Your Interests**: Determine your specific interests within machine learning, whether it's computer vision, natural language processing, reinforcement learning, or another subfield. This will help you target relevant internships.
2. **Build a Strong Foundation**: Ensure you have a solid understanding of fundamental concepts in machine learning, including algorithms, data preprocessing, model evaluation, and programming languages such as Python and libraries like TensorFlow or PyTorch.
3. **Develop Projects**: Work on machine learning projects to demonstrate your skills and build a portfolio. These projects could be personal projects, coursework, or participation in hackathons and competitions like Kaggle.
4. **Networking**: Network with professionals in the field through LinkedIn, professional organizations, and industry events. Attend meetups, conferences, and workshops related to machine learning to connect with potential mentors and employers.
5. **Explore Internship Opportunities**: Look for machine learning internship openings on job boards, company websites, and internship platforms. Some companies offer formal internship programs specifically focused on machine learning and AI.
6. **Prepare Your Application**: Tailor your resume and cover letter to highlight relevant skills, experiences, and projects related to machine learning. Emphasize your passion for the field and your eagerness to learn and contribute.

7. **Practice Interviewing**: Be prepared for technical interviews that may include coding challenges, problem-solving exercises, and discussions of machine learning concepts and techniques. Practice coding and whiteboard interviews, and review common machine learning interview questions.
8. **Apply and Follow Up**: Apply to internships that align with your interests and qualifications. Follow up with companies after submitting your application to express your continued interest and inquire about the status of your application.
9. **Consider Remote Opportunities**: Don't limit your search to local opportunities. Many companies offer remote internships, which can broaden your options and provide valuable experience working in a distributed environment.
10. **Stay Persistent and Positive**: Finding the right internship opportunity may take time and effort, so stay persistent and maintain a positive attitude throughout the process. Keep learning, improving your skills, and seeking out new opportunities.

MACHINE LEARNING ARCHICTURE

The architecture of a machine learning system can vary depending on factors such as the problem domain, the size and complexity of the dataset, the desired performance metrics, and the available computing resources. However, a typical machine learning architecture involves several key components:

1. **Data Collection**: The first step in any machine learning project is collecting relevant data. This may involve gathering data from various sources such as databases, APIs, sensors, or external datasets. The quality and quantity of data collected play a crucial role in the success of the machine learning model.
2. **Data Preprocessing**: Once the data is collected, it needs to be preprocessed to make it suitable for training machine learning models. This includes tasks such as cleaning the data to remove noise and outliers, handling missing values, and scaling or normalizing the features.
3. **Feature Engineering**: Feature engineering involves selecting and transforming the input features to improve the performance of the machine learning model. This may include creating new features, transforming existing features, or selecting the most relevant features for the task at hand.
4. **Model Selection**: The next step is to select an appropriate machine learning algorithm for the problem at hand. This may involve trying out different algorithms and evaluating their performance using techniques such as cross-validation.
5. **Model Training**: Once the algorithm is selected, the next step is to train the model using the preprocessed data. During training, the model learns to make predictions by adjusting its parameters to minimize a loss function.

6. **Model Evaluation**: After training, the model needs to be evaluated to assess its performance on unseen data. This involves testing the model on a separate validation set or using techniques such as cross-validation to assess its generalization ability.
7. **Hyper parameter Tuning**: Many machine learning algorithms have hyper parameters that need to be tuned to optimize the model's performance. This may involve techniques such as grid search or random search to find the best combination of hyper parameters.
8. **Model Deployment**: Once the model is trained and evaluated, it can be deployed into a production environment where it can make predictions on new, unseen data. This may involve integrating the model into existing software systems or deploying it as a web service/API.
9. **Monitoring and Maintenance**: After deployment, it's important to monitor the model's performance in production and update it as necessary to maintain its accuracy and reliability. This may involve retraining the model on new data or updating it to adapt to changing conditions.

Overall, the architecture of a machine learning system is highly iterative and involves multiple stages of data collection, preprocessing, model training, evaluation, and deployment. Collaboration between data scientists, machine learning engineers, and domain experts is often necessary to design and implement effective machine learning solutions. Additionally, the use of tools and frameworks such as Tensor Flow, PyTorch, scikit-learn, and Apache Spark can help streamline the development and deployment process.

Machine learning coding involves writing code to implement machine learning algorithms, preprocess data, train models, evaluate performance, and deploy solutions. Here are the key steps involved in machine learning coding:

1. **Setting Up Development Environment**: Install necessary libraries and frameworks for machine learning development. Common libraries include Tensor Flow, PyTorch, scikit-learn, Keras, and NumPy for numerical computing.
2. **Loading and Preprocessing Data**: Use libraries like Pandas to load and preprocess data. Preprocessing steps may include handling missing values, encoding categorical variables, scaling features, and splitting data into training and testing sets.
3. **Choosing and Implementing Algorithms**: Select appropriate machine learning algorithms based on the problem at hand (e.g., classification, regression, clustering). Implement algorithms using libraries like scikit-learn or Tensor Flow/Keras.
4. **Training the Model**: Train the machine learning model using the training data. Fit the model to the training data by calling the `fit()` method and passing the features and labels.
5. **Hyper parameter Tuning**: Optimize the model's performance by tuning hyper parameters. Use techniques like grid search or random search to find the best combination of hyper parameters.

6. **Evaluating Model Performance**: Evaluate the trained model's performance using appropriate evaluation metrics (e.g., accuracy, precision, recall, F1-score, ROC curve). Use libraries like scikit-learn to compute evaluation metrics.
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# Make predictions on the testing data
y_pred = clf.predict(X_test)

# Evaluate the model's performance
accuracy = accuracy_score(y_test, y_pred)
print("Accuracy:", accuracy)
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This code trains a decision tree classifier on the Iris dataset and evaluates its accuracy on a held-out test set.

A
Internship Training Report

ON

EMBEDDED SYSTEMS ENGINEER

At

SOFCON INDIA PRIVATE LIMITED

Submitted for interim evaluation of

Bachelor of Technology

in

Electronics&Communication Engineering

By

RITESH KUMAR (2002310400005)

Department Of Electronics & Communication Engineering

RD Engineering College,Ghaziabad (U.P.) India

SESSION : 2023

ACKNOWLEDGEMENT

Firstly, I would like to thank Mr. Bhagwan Singh Company Director of Embedded System Design, for giving me the opportunity to do internship training within this esteemed organization and giving me the technical knowledge, facilities and relevant information which guided me throughout vocational training and I am sure it will help me further in future also.

I am sincerely grateful to Mr. Raj Singh Head of Section), Mr.Vivek Kumar (Head of Software Department) and others, who constantly supported me and provided me the right path with industrial knowledge and technical demonstrations which helped me complete my training in the stated sections.

The hands-on experience and exposure to provided me with a comprehensive understanding of the industry. I am grateful for the trust placed in me and for the challenging opportunities that have helped me enhance my technical skills and problem-solving abilities.

Lastly, I would like to extend my thanks to the entire management team and the organization as a whole for providing me with this incredible opportunity.

Once again, I express my deepest appreciation for the invaluable experience and the support extended to me during my internship.

Thank you for providing me with this enriching opportunity.

- RITESH KUMAR

Embedded System

Embedded systems are specialized computing systems designed to perform dedicated functions within a larger system or device. They are often found in everyday devices and applications where they provide specific functionality, typically with constraints such as limited processing power, memory, and energy resources. Some common examples of embedded systems include:

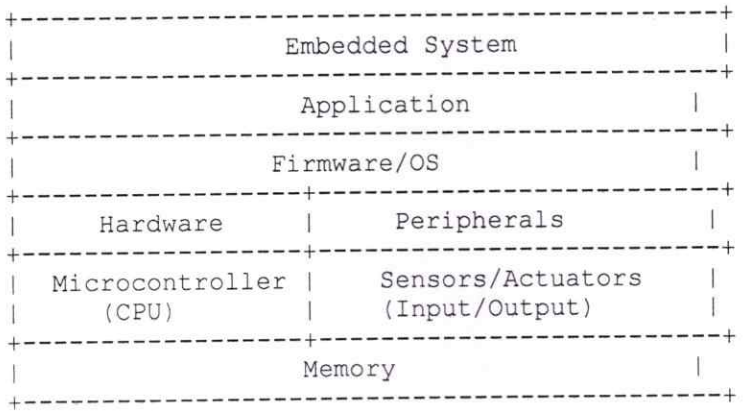
1. **Consumer Electronics**: Embedded systems are prevalent in consumer electronics such as smartphones, digital cameras, smart TVs, and home appliances like washing machines and microwave ovens.
2. **Automotive Systems**: Embedded systems are extensively used in automobiles for functions such as engine control, anti-lock braking systems (ABS), airbag deployment, entertainment systems, navigation, and driver assistance systems.
3. **Industrial Automation**: Embedded systems play a crucial role in industrial automation and control systems, including programmable logic controllers (PLCs), supervisory control and data acquisition (SCADA) systems, and robotic systems.
4. **Medical Devices**: Many medical devices, such as pacemakers, insulin pumps, heart rate monitors, and medical imaging equipment, rely on embedded systems for their operation and functionality.
5. **Communication Systems**: Embedded systems are integral to communication devices and networks, including routers, modems, switches, and base stations for wireless communication technologies like Wi-Fi, Bluetooth, and cellular networks.

Embedded systems typically consist of a microcontroller or microprocessor, memory (RAM and ROM), input/output interfaces, and often include specialized hardware components such as sensors, actuators, and communication modules. They are programmed to perform specific tasks efficiently and reliably, often in real-time or near-real-time environments.

Designing and developing embedded systems require expertise in hardware design, firmware/software development, and system integration. Engineers working in this field must consider factors such as power consumption, reliability, safety, and security throughout the development lifecycle. Tools and programming languages commonly used for embedded systems development include C/C++, assembly language, and specialized integrated development environments (IDEs) and compilers tailored for specific microcontroller architectures.

Certainly! Below is a simplified diagram illustrating the components and interactions within an embedded system:

sql



Explanation:

- **Embedded System**: This is the overarching system that includes both hardware and software components designed to perform specific functions within a larger device or system.
- **Application**: This represents the specific functionality or tasks that the embedded system is designed to perform. It could be anything from controlling a thermostat to managing a robotic arm.
- **Firmware/OS**: This layer includes the software that interfaces between the hardware and the application. It could be a lightweight real-time operating system (RTOS) or firmware code directly written to control the hardware.
- **Hardware**: This encompasses the physical components of the embedded system, including the microcontroller (CPU), memory, and various peripherals.
- **Peripherals**: These are hardware components that extend the capabilities of the embedded system, such as sensors (for input) and actuators (for output). Examples include temperature sensors, motors, displays, and communication modules.
- **Microcontroller (CPU)**: This is the central processing unit of the embedded system, responsible for executing instructions and controlling the operation of the hardware components.
- **Memory**: This includes both volatile memory (RAM) and non-volatile memory (ROM/Flash) used for storing program code, data, and configuration settings.

This diagram provides a high-level overview of the key components and their interactions within an embedded system. Depending on the specific application and requirements, the actual architecture and components may vary.

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The architecture of an embedded system can vary depending on the specific requirements of the application and the resources available. However, a typical embedded system architecture consists of several key components:

1. **Microcontroller/Microprocessor**: At the heart of the embedded system is the microcontroller or microprocessor, which serves as the central processing unit (CPU). It executes instructions and manages the operation of the entire system.
2. **Memory**: Embedded systems require various types of memory to store program code, data, and configuration settings. This includes:
    - **Program Memory (ROM/Flash)**: Stores the firmware or program code that controls the behavior of the system.
    - **Data Memory (RAM)**: Temporary storage for variables and data used during program execution.
    - **EEPROM**: Non-volatile memory for storing persistent data or settings that need to be retained even when power is removed.
3. **Input/Output (I/O) Interfaces**: Embedded systems interact with the external environment through input and output interfaces. These interfaces connect the system to sensors, actuators, displays, communication modules, and other peripherals. Common types of I/O interfaces include GPIO (General Purpose Input/Output), UART (Universal Asynchronous Receiver-Transmitter), SPI (Serial Peripheral Interface), I2C (Inter-Integrated Circuit), and PWM (Pulse Width Modulation).
4. **Peripherals**: Peripherals extend the capabilities of the embedded system and enable it to perform specific tasks. Examples of peripherals include:
    - **Sensors**: Collect data from the environment, such as temperature, pressure, light, motion, etc.
    - **Actuators**: Control physical devices or systems, such as motors, valves, relays, LEDs, etc.
    - **Communication Modules**: Facilitate communication with other devices or systems, either locally (e.g., via UART, SPI, I2C) or over a network (e.g., Ethernet, Wi-Fi, Bluetooth, cellular).
5. **Power Supply**: Embedded systems require a stable power supply to operate reliably. Depending on the application, this could be provided by batteries, AC mains, or other power sources. Power management circuitry may also be included to optimize power consumption and extend battery life.
6. **Real-Time Clock (RTC)**: Some embedded systems include an RTC to keep track of the current time and date, even when the system is powered off. This is useful for applications that require timestamping, scheduling, or time-based operations.
7. **Watchdog Timer**: A watchdog timer is a hardware component that monitors the operation of the system. If the system becomes unresponsive or fails to execute certain tasks within a specified timeframe, the watchdog timer can reset the system to recover from the error.

8. **Bus Architecture**: The various components of the embedded system are interconnected using a bus architecture, which provides a communication pathway for data transfer between the CPU, memory, peripherals, and other system components. Common bus architectures include the System-on-Chip (SoC) bus, Peripheral Component Interconnect (PCI) bus, and Industry Standard Architecture (ISA) bus.

Overall, the architecture of an embedded system is highly tailored to the specific application requirements, balancing factors such as performance, power consumption, cost, and size constraints. Designing an effective embedded system architecture involves careful consideration of these factors and selecting the appropriate components and interfaces to meet the desired functionality and performance goals.

Embedded system coding involves writing software to control and manage the operation of an embedded system. This typically involves programming the microcontroller or microprocessor at the heart of the system to perform specific tasks, interface with peripherals, and respond to external events. Here are some key aspects of embedded system coding:

1. **Selecting a Programming Language**: Common programming languages for embedded system development include C, C++, and assembly language. C is particularly popular due to its efficiency, low-level control, and wide availability of compilers and toolchains for various microcontroller architectures. C++ is also used in some cases, especially for larger and more complex embedded systems. Assembly language is occasionally used for low-level optimizations or when direct hardware control is required.
2. **Choosing a Development Environment**: Embedded system development often requires specialized tools and software environments. This includes Integrated Development Environments (IDEs) such as Eclipse, Keil µVision, or MPLAB X IDE, which provide features like code editing, compilation, debugging, and simulation. Additionally, toolchains for cross-compilation are used to compile code for the target microcontroller architecture on a development machine.
3. **Writing Firmware/Software**: Embedded system coding involves writing firmware or software that controls the behavior of the system. This includes tasks such as:
    - Initializing hardware peripherals and setting up the system configuration.
    - Implementing algorithms and logic to perform specific tasks or functions.
    - Handling interrupts and responding to external events in real-time.
    - Managing power consumption and optimizing performance.
    - Implementing communication protocols for interfacing with other devices or systems.
4. **Peripheral Interface Programming**: Embedded systems often interact with various peripherals such as sensors, actuators, displays, and communication modules. Writing code to interface with these peripherals involves:
    - Configuring peripheral registers and settings.
    - Reading sensor data and processing input signals.
    - Controlling actuators and output devices.
    - Implementing communication protocols (e.g., UART, SPI, I2C) for data exchange.

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5. **Testing and Debugging**: Testing and debugging are essential parts of embedded system development to ensure the correctness, reliability, and performance of the code. This includes:
    - Testing individual software components and modules.
    - Debugging code using tools such as in-circuit emulators (ICE), debuggers, and logic analyzers.
    - Performing hardware-in-the-loop (HIL) testing to verify software behavior on the actual embedded hardware.
    - Using simulation tools and virtual platforms for early development and testing.
6. **Optimization and Performance Tuning**: Embedded system coding often involves optimizing code for performance, size, and power consumption. This may include:
    - Using efficient algorithms and data structures.
    - Minimizing memory usage and code size.
    - Employing low-power modes and techniques to reduce energy consumption.
    - Profiling code and identifying performance bottlenecks for optimization.

Embedded system coding requires a good understanding of hardware-software interaction, low-level programming, real-time systems, and system-level design. It's essential to follow best practices, adhere to coding standards, and document the code thoroughly for maintainability and future development. Additionally, collaboration with hardware engineers and system architects is often necessary to ensure seamless integration of software with the embedded hardware.

A
Internship Training Report

ON

WEB DEVELOPMENT INTERNET

At

PRODIGY INFOTECH

Submitted for interim evaluation of

Bachelor of Technology

in

Electronics & Communication Engineering

By

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SESSION: 2023

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- Suraj Arya

WEB DEVELOPMENT INTERNET

. Web development on the internet involves creating websites or web applications that are accessible over the World Wide Web. Here's an overview of key aspects of web development on the internet:

1. **Frontend Development**: Frontend development involves creating the user interface and user experience of a website or web application. This includes HTML for structure, CSS for styling, and JavaScript for interactivity. Frontend frameworks and libraries like React, Angular, and Vue.js are commonly used to streamline development and enhance user experience.
2. **Backend Development**: Backend development involves creating the server-side logic and databases that power a website or web application. This includes writing code in languages like Python, JavaScript (Node.js), Ruby, PHP, or Java, and using frameworks like Django, Flask, Express.js, Ruby on Rails, Laravel, or Spring Boot. Backend development also includes working with databases such as MySQL, PostgreSQL, MongoDB, or Firebase to store and retrieve data.
3. **Full-Stack Development**: Full-stack development involves working on both the frontend and backend components of a web application. Full-stack developers have skills in both frontend and backend technologies, allowing them to build entire web applications from start to finish.
4. **Responsive Design**: With the increasing use of mobile devices, responsive design is essential for ensuring that websites and web applications look and function well across different screen sizes and devices. CSS frameworks like Bootstrap and MaterializeCSS provide pre-built responsive design components.
5. **Web Development Tools**: Various tools and technologies are used in web development to streamline the development process and improve productivity. These include code editors like Visual Studio Code, Sublime Text, or Atom, version control systems like Git, and package managers like npm (for Node.js) or yarn.
6. **Web Hosting and Deployment**: Once a website or web application is developed, it needs to be hosted on a web server to be accessible over the internet. Web hosting

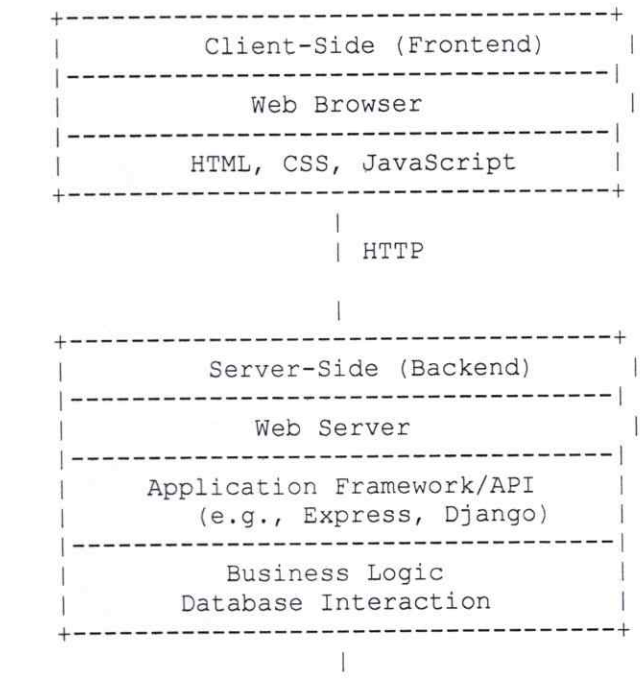
services provide server space and infrastructure for hosting websites. Deployment tools like Heroku, Netlify, Vercel, or AWS Elastic Beanstalk facilitate the deployment process.

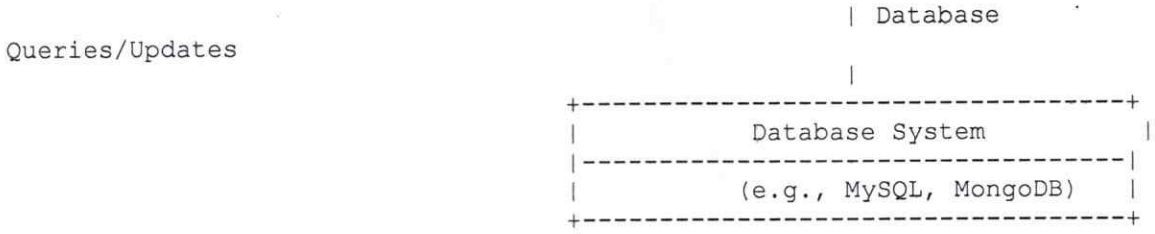
7. **Security**: Web developers need to consider security aspects when developing web applications to protect against common vulnerabilities like SQL injection, cross-site scripting (XSS), cross-site request forgery (CSRF), and others. Implementing security best practices and using tools like HTTPS, content security policy (CSP), and secure coding practices help enhance the security of web applications.
8. **Accessibility**: Web developers should also consider accessibility when designing and developing websites to ensure that they are usable by people with disabilities. Following accessibility standards like the Web Content Accessibility Guidelines (WCAG) and testing with assistive technologies help make websites more accessible.

Overall, web development on the internet involves a combination of frontend and backend technologies, design principles, development tools, and best practices to create functional, visually appealing, and secure websites and web applications.

Certainly! Below is a simplified diagram illustrating the components and interactions within a typical web development architecture:

sql





Explanation:

- **Client-Side (Frontend)**: The client-side of a web application runs within the user's web browser. It consists of HTML (Hypertext Markup Language) for structuring content, CSS (Cascading Style Sheets) for styling, and JavaScript for interactivity. The client-side code communicates with the server-side through HTTP requests and receives responses to update the user interface dynamically.
- **Server-Side (Backend)**: The server-side of a web application handles requests from the client-side, processes data, interacts with databases, and generates responses. It typically runs on a web server and may use application frameworks or APIs (Application Programming Interfaces) to handle routing, middleware, authentication, and other functionalities.
- **Web Server**: The web server is responsible for serving static files (e.g., HTML, CSS, JavaScript) to the client-side and forwarding dynamic requests to the appropriate backend components. Popular web servers include Apache, Nginx, and Microsoft IIS (Internet Information Services).
- **Application Framework/API**: The application framework or API provides a structured way to build backend logic and handle HTTP requests. Examples include Express.js for Node.js, Django for Python, Ruby on Rails for Ruby, and Laravel for PHP.
- **Business Logic**: This layer contains the core logic of the application, including user authentication, authorization, data validation, and manipulation. It interacts with the database to retrieve and store data.
- **Database System**: The database system stores and manages the application's data. It can be a relational database management system (RDBMS) like MySQL, PostgreSQL, or SQL Server, or a NoSQL database like MongoDB, Cassandra, or Firebase.

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This diagram illustrates the flow of data and interactions between the client-side and server-side components in a web development architecture. It highlights the separation of concerns between frontend and backend components, with each responsible for specific functionalities in the web application.

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CERTIFICATE

OF INTERNSHIP

THIS CERTIFICATE IS PROUDLY PRESENTED TO

Shivam

"This certificate proudly acknowledges the completion of an internship in **Machine Learning** from **14th September, 2023** to **25th November, 2023**. During the internship, the student has demonstrated commendable dedication, hard work, and exceptional intelligence, making a significant contribution to the program."

01/12/2023
DATE

CEO & FOUNDER

Dr. Vishal Upmanu

R.D. Engineering College Head ECE Ghaziabad

CERTIFICATE ID: IT/2023/ML/1929
WWW.INTERNSELITE.COM

Director
R.D. Engineering College
Duhai, Ghaziabad

Director
R.D. Engineering College
Duhai, Ghaziabad

nterns lite

CERTIFICATE

THIS CERTIFICATE IS PROUDLY PRESENTED TO

Director
R.D. Engineering College
Duhai, Ghaziabad

SHAKEEL AHMAD

"This certificate proudly acknowledges the completion of an internship in **Machine Learning** from **14th September, 2023** to **25th November, 2023**. During the internship, the student has demonstrated commendable dedication, hard work, and exceptional intelligence, making a significant contribution to the program."

01/12/2023
DATE

R.D. Engineering College Duhai, Ghaziabad

CEO & FOUNDER

Dr. Vishal Upmanu
HOD
ECE
R.D. Engineering College
Ghaziabad

CERTIFICATE ID: **IT/2023/ML/1929**
WWW.INTERNSELITE.COM

Enriching Skills
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कौशल भारत-कुशल भारत

N·S·D·C

CERTIFICATE

This is to certify that

Ms./Mr. **RITESH KUMAR**

Son/Daughter of **RISHIPAL SINGH** Student ID **CAN_23602254**

has successfully completed the **EMBEDDED SYSTEMS ENGINEER** Course

with Grade **B** from **SOFCON INDIA PRIVATE LIMITED**

Date of Issuance: 4th August 2023

Certificate ID: CERT_1299476

Director
R.D. Engineering College
Dasnai, Ghaziabad

Director
R.D. Engineering College
Dasnai, Ghaziabad

Dr. Vishal Upmanu
Head
ECE

Issued by

Bhagwan Singh
Director
Sofcon India Private Limited

This is a System-generated Certificate. Assessment and Grading of the Candidate is provided/facilitated solely by the respective training provider based on its evaluation parameters.

PRODIGY INFOTECH

INTERNSHIP OFFER LETTER

Date: **30/09/2023**

CIN: **PIT/OCT23/4156**

Dear **Suraj Arya,**

We are pleased to offer you the position of **Web Development Intern** at **Prodigy InfoTech**.This is an educational internship. As a valued member of our team, you will have the opportunity to gain hands-on experience in this field.

The internship is scheduled to commence on the **1st of October, 2023** and will conclude on the **31st of October, 2023**, resulting in a one-month duration for the program.

By accepting this offer, you acknowledge that you understand participation in this program is not an offer of employment, and successful completion of the program does not entitle you to an employment offer from Prodigy InfoTech.

You also agree that you will follow all of the company's policies that apply to non-employee interns. This letter constitutes the complete understanding between you and the company regarding your internship and supersedes all prior discussions or agreements. This letter may only be modified by a written agreement signed by both of us.

We eagerly anticipate your commencement of the internship program at Prodigy InfoTech and extend our best wishes for a prosperous experience.

Sincerely,

Prodigy InfoTech

Director
R.D. Engineering College
Duhai, Ghaziabad

Head
ECE

PRODIGY INFOTECH
UDYAM-MH-19-0221586

Email
contact@prodigyinfotech.dev
Website
prodigyinfotech.dev

MSME

दूरभाष Tele 23907166/111
फैक्स Fax
ईमेल E-mail tcpnr.cfees@gov.in

सं No. CFEES/HRG/V-Trg/2022/487
भारत सरकार रक्षा मंत्रालय
Government of India Ministry of Defence
रक्षा अनुसंधान एवं विकास संगठन
Defence Research and Development Organisation
अग्नि विस्फोटक एवं पर्यावरण सुरक्षा केंद्र
Centre for Fire, Explosive and Environment Safety
ब्रिग एस के मजूमदार मार्ग दिगीपुर
Brig S K Mazumdar Road, Delhi-54
दिल्ली Delhi
Date 7 Oct 2022

To,
The Head
Dr APJ Abdul Kalam Technical Univ
Lucknow

Sub Vocational Training 2022 at CFEES

Ref Your Letter no. Nil Dated. Nil

Sir,

1. कु/सुश्री Lakshay Singhania, B Tech., (ECE) आपके संस्थान के 3rd Year छात्र/छात्रा के व्यावसायिक प्रशिक्षण अनुरोध को CFEES, DRDO में [redacted] के लिए बिना किसी वित्तीय सहायता के स्वीकार कर लिया गया है।

2. प्रशिक्षण अवधि के दौरान छात्र/छात्रा को इस प्रयोगशाला के अनुशासन और सुरक्षा मानदंडों का पालन करना होगा। छात्र/छात्रा को निम्नलिखित दस्तावेज लाने की सलाह दी जाती है

- स्टाम्प आकार की नवीनतम फोटो की तीन प्रतियां
- कॉलेज से पत्र मूल यदि पहले नहीं दिया गया है
- संस्थान कॉलेज विभाग का पहचान पत्र मूल
- कॉलेज राजपत्रित अधिकारी से चरित्र प्रमाण पत्र
- पता प्रमाण

3. उपरोक्त दस्तावेजों के अभाव में, व्यावसायिक प्रशिक्षु के प्रवेश को सीएफईईएस (CFEES) परिसर में अनुमति नहीं दी जाएगी।

छात्र/छात्रा को 01 November 2022 को व्यावसायिक प्रशिक्षण के लिए शामिल होने और 10:30 बजे अपॉइंटमेंट लेटर तैयार करने का निर्देश दिया जाता है।

Head-TCP&HR
For Director

Copy to

Mr/Ms. Lakshay Singhania
Mob No- 9871894609
Email - lakshay9236@gmail.com

INTERNAL

1. Sh Hemant Shukla Sc. F (through AD - FSEG, Security Office)

Training Certificate shall be issued through TCP&HR for info

Dr. Vishal Upmanu
Head
ECE
R.D. Engineering College
Ghaziabad

Director
R.D. Engineering College
Duhai, Ghaziabad

Director
R.D. Engineering College
Duhai, Ghaziabad

CONCEPT MACHINES

Baba Nagar, Opp.-Uttam Industries, Meerut Road, Ghaziabad-201003 (INDIA)
Website : www.conceptmachines.net, email : info@conceptmachines.net
Tel. : 91-9811632774, 9811632776, 9811027006, 9999056064

6th September, 2023

TO WHOM SOEVER IT MAY CONCERN

This is to certify that Mr. AMARNATH MAURYA Roll No. 2102310409004 Student of Degree B. Tech. / Mech. Eng. After VIth SEMESTER from has undergone an Internship for training. Period 07th August 2023. to 06th Sept., 2023 at in our Organization. During the tenure of his internship Training we found him sincere and hardworking,

We wish him all the success for his bright future.

FOR CONCEPT MACHINES

For Concept Machines

Manager (HR)
Raj Kumar Singh

Manager (HR)
(RAJ KUMAR SINGH)

R.D. Engineering College
Head
ME

Director
R.D. Engineering College
Duhai, Ghaziabad

CONCEPT MACHINES
Baba Nagar, Opp.-Uttam Industries, Meerut Road, Ghaziabad-201003 (INDIA)
Website : www.conceptmachines.net, email : info@conceptmachines.net
Tel. : 91-9811632774, 9811632776, 9811027006, 9999056064

6th September, 2023

TO WHOM SOEVER IT MAY CONCERN

This is to certify that Mr. NAMAN Roll No. 2002310400011 Student of Degree B. Tech. / Mech. Eng..After VI[th] SEMESTER from has undergone an Internship for training. Period 07th August 2023. To 06th Sept.. 2023 at in our Organization. During the tenure of his internship Training we found him sincere and hardworking,

We wish him all the success for his bright future.

FOR CONCEPT MACHINES
For Concept Machines
Manager (HR)
Raj Kumar Singh
Manager (HR)
(RAJ KUMAR SINGH)

R.D. Engineering College
Head
ME

R.D. Engineering College
Dunai, Ghaziabad

Director
R.D. Engineering College
Dunai, Ghaziabad

BOKARO STEEL PLANT

CERTIFICATE

BSL URN :5911633

This is to certify that Mr./Ms. **SUNNY RAJ**

who is a student of **R.D ENGINEERING COLLEGE**

has undergone **04** weeks Practical Training in this organisation

from **12.09.2023** to **07.10.2023.**

His/Her overall performance during training was **GOOD.**

TRAINING DETAILS

Project Training - Area(s): **STUDY AND IMPROVEMENT OF SLAB CONVEYING SYSTEM**

*** This is a System generated certificate signature not required***

R.D. Engineering College
Head
ME

R.D. Engineering College
Duhai, Ghaziabad

CONCEPT MACHINES

Baba Nagar, Opp. Uttam Industries, Meerut Road, Ghaziabad-201003 (INDIA)
Website : www.conceptmachines.net, email : info@conceptmachines.net
Tel. : 91-9811632774, 9811632776, 9811027006, 9999056064

6th September. 2023

TO WHOM SOEVER IT MAY CONCERN

This is to certify that Mr. NAVNEET KUMAR Roll No. 2002310400012 Student of Degree B. Tech. / Mech. Eng. After VIth SEMESTER from has undergone an Internship for training. Period 07th August 2023. to 06th Sept.. 2023 at in our Organization. During the tenure of his internship Training we found him sincere and hardworking.

We wish him all the success for his bright future.

FOR CONCEPT MACHINES

For Concept Machines

Manager (HR)

Raj Kumar Singh

Manager (HR)
(RAJ KUMAR SINGH)

R.D. Engineering College
Head
ME

R.D. Engineering College
Director
Ghaziabad

CONCEPT MACHINES
Baba Nagar, Opp. Uttam Industries, Meerut Road, Ghaziabad-201001 (INDIA)
Website : www.conceptmachines.net, email : info@conceptmachines.net
Tel. : 91-9811632774, 9811632776, 9811027006, 9999056064

6th September, 2023

TO WHOM SOEVER IT MAY CONCERN

This is to certify that Mr. DEVENDER Roll No. 2002310400005 Student of Degree B. Tech. / Mech. Eng. After VI^th SEMESTER from has undergone an Internship for training. Period 07th August 2023. To 06th Sept., 2023 at in our Organization. During the tenure of his internship Training we found him sincere and hardworking.

We wish him all the success for his bright future.

FOR CONCEPT MACHINES

For Concept Machines

Manager (HR)

Raj Kumar Singh
Manager (HR)
(RAJ KUMAR SINGH)

R.D. Engineering College
Head
ME

R.D. Director
R.D. Engineering College
Duhai, Ghaziabad

Director
R.D. Engineering College
Duhai, Ghaziabad

CONCEPT MACHINES
Baba Nagar, Opp. Uttam Industries, Meerut Road, Ghaziabad-201003 (INDIA)
Website : www.conceptmachines.net, email : info@conceptmachines.net
Tel. : 91-9811632774, 9811632776, 9811027006, 9999035664

6th September, 2023

TO WHOM SOEVER IT MAY CONCERN

This is to certify that Mr. AASHHISH Roll No. 2002310400001 Student of Degree B. Tech. / Mech. Eng. After VI^th SEMESTER from has undergone an Internship for training. Period 07th August 2023, To 06th Sept., 2023 at in our Organization. During the tenure of his internship Training we found him sincere and hardworking.

We wish him all the success for his bright future.

FOR CONCEPT MACHINES

For Concept Machines

Manager (HR)
Raj Kumar Singh

Manager (HR)
(RAJ KUMAR SINGH)

Head
ME

Director
R.D. Engineering College
Duhai, Ghaziabad

Director
R.D. Engineering College
Duhai, Ghaziabad

SUMMER TRAINING PROJECT REPORT

On

A STUDY ON CONSUMER DECISION MAKING VARIABLES OF ZOMATO"

A report submitted for the award of Master of Business Administration (MBA) from Dr. APJ Abdul Kalam Technical University Uttar Pradesh, Lucknow

Submitted By

ABHISHT PANDEY

2102310700001

Under Supervision of

DR. GAURAV BANSAL

PROFESSOR

(2022-2023)

RD Engineering College

Department of Management Studies

Meerut Road Duhai Ghaziabad-201206 (U.P.)

Director
R.D. Engineering College
Duhai, Ghaziabad

CERTIFICATE OF THE GUIDE

Mentor / Guide Name: DR. GAURAV BANSAL

Designation: PROFESSOR

This is to certify that the project report titled "**A Study On Consumer Decision Making Variables of Zomato**" has been prepared by **ABHISHT PANDEY, 2102310700001** under my supervision and guidance, for the fulfillment of a master's in business administration. His fieldwork is satisfactory.

Date: 16/8/22

Signature of Guide

Director
R.D. Engineering College
Duhai, Ghaziabad

DECLARATION

I do hereby declare that this project work titled "**A Study On Consumer Decision Making Variables of Zomato**" submitted by me for the fulfillment of the requirement for the award of Master in Business Administration (MBA) is a record of my research work. The report embodies the finding based on my study and observation and has not been submitted earlier for the award of any degree or diploma to any Institute or University.

Date: 15/8/22

Name: ABHISHT PANDEY

Roll No: 2102310700001

Director
R.D. Engineering College
Duhai, Ghaziabad

Preface

Technical study is incomplete without the practical knowledge. No doubt theory provides the fundamental stone for the guidance of practice examines the element of truth lying in the theory.

There is a well-known proverb "without practical knowledge no one can achieve success". It is like "experience is the best teacher" on that base we can say, a person who wants to be successful in the life she has to have knowledge about theoretical as well as practical knowledge and step into the giant world.

Practice make man prefect as it said that study with knowledge you know only theoretical work and with experience you know that exact practical functioning and meaning.

I am obliged to represent my dissertation report on "Consumer decision making variables on Zomato". The dissertation report is all about a survey conducted of several respondents who are users of Zomato and then carried out further analysis, interpretation and prepared a detailed report.

Director
R.D. Engineering College
Duhai, Ghaziabad

zomato

Acknowledgement

The completion of this study would have been impossible without the material and moral support from various people. It is my obligation therefore to extend my gratitude to them. First of all I thank the Almighty God for giving me good health, and guiding me through the entire training period.

I want to thanks to those people to whom whenever I approached for help they have given me their valuable time. First of all I want to take the opportunity to thanks **Mr. Sumit Singh** ***(Quality Manager)*** for their appreciation and guidance.

I also extend my gratitude to my Project Guide **DR. GAURAV BANSAL**, who assisted me in compiling the project.

I would also like to thank all the faculty members of ITS for their critical advice and guidance without which this project would not have been possible.

16/8/22

ABHISHT PANDEY

ROLL NO. 2102310700001

Director
R.D. Engineering College
Duhai, Ghaziabad

zomato

Executive Summary

This report has been prepared with a specific purpose in mind. It outlines the history and current scenario of Zomato globally and locally. The first part of the study takes us through the present state of affairs of the online food industry.

The report contains a brief introduction of Zomato and a detailed view of the tasks, which have been undertaken to analyse the market of Zomato i.e. we have evaluated the company on Michael Five force model, PESTLE analysis and SWOT analysis of Zomato in order to identify areas of potential growth for Zomato.

The main objective of the study is to evaluate performance and acceptability in terms of security, user friendliness, accuracy and reliability and to understand consumer behaviour and perception towards Zomato and also to study the consumer decision making variables regarding Zomato.

The study is conducted through primary and secondary data and the sample size is 150 respondents. Time budget of the study is 2 months. The primary data is collected from respondents who are users of Zomato.

Hypothesis test is conducted in the research project, chi-square test, one sample test and factor analysis are conducted to show the relationship between consumer decision making variables and various services offered by Zomato.

Some of the major findings from the study are as majority of the respondents found the food ordered by Zomato is somewhat hygienic. Most of the people trust on Zomato and are satisfied with the delivery services of Zomato. Youngsters who are students are attached to the online food ordering through Zomato and majority of them found the delivery charges medium.

Keywords: *Online food industry, Service quality, website/application quality and easiness, product quality and freshness.*

Director
R.D. Engineering College
Duhai, Ghaziabad

zomato

TABLE OF CONTENT

Director
R.D. Engineering College
Duhai, Ghaziabad

zomato

INDEX OF TABLES AND GRAPHS

Director
R.D. Engineering College
Duhai, Ghaziabad

ZOMATO LIMITED

11/157 A, Sector 3, Rajendar Nagar, Ghaziabad

Ph. no:- +919711024007

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **ABHISHT PANDEY,** MBA-III Semester, Student of **RD Engineering College, Ghaziabad** has successfully Completed his Summer Training on Topic :- **"A STUDY ON CONSUMER DECISION MAKING VARIABLES OF ZOMATO."** of Eight weeks duration. During session: **2022-23.**

He bears a good character . We wish him good luck for his future endeavours.

For **ZOMATO LIMITED.**

R.D. Engineering College Head MBA

Sumit 5/8/22

MR. SUMIT SINGH

(Quality Manager)

Director
R.D. Engineering College
Duhai, Ghaziabad

R.D. Engineering College Head MBA

Summer Training Project Report

ON

"FINANCIAL RATIO ANALYSIS
OF
TATA MOTORS"

TO BE SUBMITTED TO DR. A.P.J ABDUL KALAM TECHNICAL UNIVERSITY, LUCKNOW

IN THE PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE DEGREE OF

MASTER OF BUSINESS ADMINISTRATION

BATCH 2022-23

Submitted To :

Dr. Gaurav Bansal
{Faculty of Management}

Submitted By :

AJAY NEGI
M.B.A III Sem
Roll No . 2102310700003

R.D. ENGINEERING COLLEGE DUHAI, GHAZIABAD

Director
R.D. Engineering College
Duhai, Ghaziabad

DECLARATION

I AJAY NEGI student of MBA III sem hereby declare that the project report title "FINANCIAL RATIO ANALSIS OF TATA MOTORS" is a genuine summer training work undertaken.

Submitted to Dr. Gaurav Bansal , faculty of Management Department, RD ENGINEERING COLLEGE, DUHAI and this has not been submitted to DR. APJ ABDUL KALAM TECHNICAL UNIVERSITY, LUCKNOW or any other institute/university toward any other degree/diploma.

Ajay 10/8/20

AJAY NEGI

M.B.A III Sem

Roll No. - 2102310700003

Director
R.D. Engineering College
Duhai, Ghaziabad

ACKNOWLEDGEMENT

"Future is for those people who have vision &more for those who have capability to see their dreams come true."

"The written words have an unfortunate tendency to degenerate genuine graduate into stilled formality. However, this is the only way; I can record my feeling permanently." The entire journey from the very idea of this project to reality would not have been possible without the guidance and support of many experienced people. I take this golden opportunity to express my gratitude to the following people:

I, wish to place on record my deep gratitude to "Dr. Gaurav Bansal" faculty of Management Department, R.D. ENGINEERING COLLEGE, DUHAI and other faculty members for their valuable suggestions and advices through the MBA course.

I also extend my thanks to the Mr.Narendra Tyagi (Account Manager) of the TATA MOTORS LTD for providing me an opportunityto undertake my Summer Training under their supervision. Also I am thankfulto all employees who directly or indirectly contributed to my work. At last but not at the least I would like to thank my parents also for encouraging me .throughout towards my studies

AJAY NEGI

Director
R.D. Engineering College
Duhai, Ghaziabad

PREFACE

Progress is a continuous process. It is relative and absolute. We cannot stop at a certain destination and declare that target has been achieved and we need not to go further. If the flow of a river stops and it gets stagnated then it is considered as dead. In the same way if a life gets stagnated then it does not have any have any reason to keep its sustenance? So in our life we should always try to learn everyday. So the main extract is that life is the name of flow. It is the flow of knowledge, wisdom. A person can be successful only if he remembers this lesson.

I was privileged enough to join **"TATA MOTORS LTD"** as a summertrainee. HereI have been guided with due care to succeed in the assignments that have beengiven to me.I was a great experience on my party to work for **TATA MOTORS LTD**.

The experience that I have gathered during this period has certainly provided me with an orientation which, I believe, will help me to shoulder my any assignments successfully in near future.

On the basis of my training programme I have tried my best efforts to arrange worksin a systematic and chronological way. However to cover detailed information about the organization in such a short period was not possible. Despite the inherent shortcomings ofthe study, a genuine attempt was made on my part to see that the study was carried out in the right perspective. If there are any shortcomings noted then it will be may fault which isdeeply regretted. I am very thankful to them who have helped me in rectifying my shortcomings during my summer training.

Director
R.D. Engineering College
Duhai, Ghaziabad

EXECUTIVE SUMMARY

The project studied in shah investor's home ltd was —role of risk and return in investment selection and portfolio management‖. Shah investor's home ltd is a leading broking firm with anextensive client base.

Stock market investors take their investment calls based on risk and return. Risk and return of different stocks were calculated. After calculating risk & return and fundamentals 10 portfolioswere suggested.

After making portfolios 5 ratios were calculated and ranks were given to the portfolios. Based onthis analysis top 5 portfolios were suggested for the investment.

TABLE OF CONTENT

Director
R.D. Engineering College
Duhai, Ghaziabad

TATA MOTORS LIMITED

Jeevan Tara Building, 5, Sansad Marg, Worli, New Delhi,110001

Ph.no:- 011 2334 1254

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **AJAY NEGI,** MBA-III Semester, a Student of **RD Engineering College, Ghaziabad** has successfully completed his Summer Training on topic :- **"FINANCIAL RATIO ANALYSIS OF TATA MOTORS."** of Eight weeks duration. During session: **2022-23.**

He bears a good character . We wish him good luck for his future endeavours.

For **TATA MOTORS LIMITED.**

4/8/22

MR. NARENDRA TYAGI

(Account Manager)

R.D. Engineering College Head MBA

Director
R.D. Engineering College
Duhai, Ghaziabad

SUMMER TRAINING PROJECT REPORT
On

MARKETING RESEARCH SALES & DISTRIBUTION OF HALDIRAM PVT. LTD.

A report submitted for the award of Master of Business Administration (MBA) from

Dr. APJ Abdul Kalam Technical University Uttar Pradesh, Lucknow

Submitted By

AMAN AGARWAL

2102310700004

Under Supervision of

MR. SARTHAK TYAGI

ASSISTANT PROFESSOR

Director
R.D. Engineering College
Duhai, Ghaziabad

(2022-2023)

RD Engineering College

Department of Management Studies

Meerut Road Duhai Ghaziabad-201206 (U.P.)

ERTIFICATE OF THE GUIDE

Mentor / Guide Name: Mr. Sarthak Tyagi

Designation: ASSISTANT PROFESSOR

This is to certify that the project report titled "**Marketing Research Sales & Distribution of Halidram Pvt. Ltd.** " has been prepared by **AMAN AGARWAL, 2102310700004** under my supervision and guidance, for the fulfillment of a master's in business administration. His fieldwork is satisfactory.

Date: 14/8/22

Signature of Guide Sarthak

Director
R.D. Engineering College
Duhai, Ghaziabad

DECLARATION

I do hereby declare that this project work titled "**Marketing Research Sales & Distribution of Halidram Pvt. Ltd.** submitted by me for the fulfillment of the requirement for the award of Master in Business Administration (MBA) is a record of my research work. The report embodies the finding based on my study and observation and has not been submitted earlier for the award of any degree or diploma to any Institute or University.

Date: 14/8/22

Name: AMAN AGARWAL

Roll No: 2102310700004

Director
R.D. Engineering College
Duhai, Ghaziabad

ACKNOWLEDGEMENT

"Perseverance inspiration and motivation have always played a key role in success of

any venture". I hereby express my deep sense of gratitude to all the personalities involved

directly and indirectly in my project work.

I would thank to God for their *blessing* and my parents also for their valuable Suggestion and support in my project report.

I express my sincere thanks to my company guide **Mr. Mohan Garg** (Sales Manager) of marketing & sales, Haldiram's Snacks Pvt. Ltd, Noida for giving me an opportunity to work under his guidance and support during the course of the project. I would also like to thank **Mr. Avnish Sharma** marketing team member, Ghaziabad for their valuable inputs and suggestions that have played a crucial role at every stage in the development of the project.

I would also like to thank **Mr. Anurag Goel (Senior Sales Officer)** for his guidance and better co-operation and help that is being provided in collecting the data and filling the questionnaire.

I owe a special debt of gratitude to the entire individual and retailers, distributors & consumers who helped me in completing the project and to all the retailers for their better cooperation & help being provided by them

Last but not the least; I would like to express my sincere gratitude to all faculty members who have taught me in my MBA curriculum and our **Mr. Sarthak Tyagi** who has always been a source of guidance, inspiration and motivation. However, I accept the sole responsibility for any possible errors of omission and would be extremely grateful to the readers of this project report if they bring such mistakes to my notice.

Aman Agarwal
MBA-III Sem.

TABLE OF CONTENT

Director
R.D. Engineering College
Duhai, Ghaziabad

HALDIRAM PRIVATE LIMITED

B-1, Sector 63 Rd,D Block, Noida, Uttar Pradesh 201301

Ph.no:-+9197644 49796

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **AMAN AGARWAL ,** MBA-III Semester, Student of **RD Engineering College, Ghaziabad** has successfully completed his Summer Training on topic :- **"MARKETING RESEARCH SALES AND DISTRIBUTION OF HALDIRAM PVT. LTD. "** of Eight weeks duration. During session: **2022-23.**

He bears a good character . We wish him good luck for his future endeavours.

For **HALDIRAM PRIVATE LIMITED.**

R.D. Engineering College Head MBA

10/8/22

Mr. Mohan Garg

(Sales Manager)

Director
R.D. Engineering College
Duhai, Ghaziabad

SUMMER TRAINING PROJECT REPORT

ON

"A STUDY ON CONSUMER PERCEPTION TOWARDS ZOMATO – AN ONLINE FOOD DELIVERY SYSTEM, DURING PANDEMIC ACROSS PAN INDIA"

Submitted in Partial Fulfillment for the award of the Degree of Master in Business administration 2022-2023

Under the Guidance of

Mr. Sarthak Tyagi

Assistant Professor MBA Department

Submitted By:

ANSHIKA Tyagi

Roll No:2102310700006

R.D. ENGINEERING COLLEGE

Affiliated to ABDUL KALAM UNIVERSITY, Lucknow

NH-58, Delhi-Meerut Road, Ghaziabad, Uttar Pradesh-201206

Director
R.D. Engineering College
Duhai, Ghaziabad

DECLARATION

I undersigned hereby declare that the project report entitled **"A Study on Consumer Perception Towards Zomato-An Online Food Delivery System During Pandemic Across Pan India"** submitted by me to the Dr. A.P.J. Abdul Kalam Technical University, Lucknow for the partial fulfilment of the requirement for the award of degree for Bachelor of Business Administration under the guidance of **Mr. Sarthak Tyagi (Asst. Prof.)** is my original work and the conclusion drawn herein are based on the material collection by myself.

Date: 21/8/22

Place: GHAZIABAD

Anshika

ANSHIKA TYAGI

ROLLNO: 2012310700006

MBA-3rd Sem.

Director
R.D. Engineering College
Duhai, Ghaziabad

ACKNOWLEDGMENT

I frequently say that —Knowledge is Power||. But this statement is true only when we apply our knowledge in practical things. To achieve this our college, R.D. Engineering College, Duhai, Ghaziabad, provided us the opportunity to work with real industry. I am declaring our humble thanks to my college for providing such opportunities to the students. I am thankful and obliged to my internal guide **Mr. Sarthak Tyagi (Assistant Professor)** and all the faculty members of R.D. Engineering College for providing all the necessary support from their side. Without their continuous guidance and support, it would have been difficult for us to complete the project on time and in such a successful manner.

Anshika

ANSHIKA TYAGI

Director
R.D. Engineering College
Duhai, Ghaziabad

EXECUTIVE SUMMARY

Director
R.D. Engineering College
Du'hai, Ghaziabad

EXECUTIVE SUMMARY

This report has been prepared with a specific purpose in mind. It outlines the history and current scenario of Zomato globally and locally. The first part of the study takes us through the present state of affairs of the online food industry.

The report contains a brief introduction of Zomato and a detailed view of the tasks, which have been undertaken to analyse the market of Zomato i.e. we have evaluated the company on Michael Five force model, Analysis of 3Cs and SWOT analysis of Zomato in order to identify areas of potential growth for Zomato.

The main objective of the study is to evaluate performance and acceptability in terms of security, user friendliness, accuracy and reliability and to understand consumer behaviour and perception towards Zomato and also to study the consumer decision making variables regarding Zomato.

The study is conducted through primary and secondary data and the sample size is 150 respondents. Time budget of the study is 2 months. The primary data is collected from respondents who are users of Zomato.

Hypothesis test is conducted in the research project, chi-square test, one sample test and factor analysis are conducted to show the relationship between consumer decision making variables and various services offered by Zomato.

Some of the major findings from the study are as majority of the respondents found the food ordered by Zomato is somewhat hygienic. Most of the people trust on Zomato and are satisfied with the delivery services of Zomato. Youngsters who are students are attached to the online food ordering through Zomato and majority of them found the delivery charges medium.

Keywords: Online food industry, Service quality, website/application quality and easiness, product quality and freshness.

Director
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LIST OF CONTENT

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TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Ms. Anshika Tyagi,** MBA-III Semester, Student of **RD Engineering College, Ghaziabad** has successfully completed her Summer Training on topic :- **"A STUDY ON CONSUMER PERCEPTION TOWARDS ZOMATO – AN ONLINE FOOD DELIVERY SYSTEM, DURING PANDEMIC."** of Eight weeks duration. During session: **2022-23.**

She bears a good character . We wish her good luck for her future endeavours.

For **ZOMATO LIMITED.**

R.D. Engineering College Head MBA

17/8/22

MR. Aakash Tomar

(Quality Manager)

Director
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