NITTE EDUCATION TRUST | N.M.A.M. INSTITUTE OF TECHNOLOGY
(An Autonomous Institution affiliated to Visvesvaraya Technological University, Belagavi)
Nitte – 574 110, Karnataka, India

Department of Computer Science and Engineering

(B.E. Computer Science & Engineering Program Accredited by NBA from 2018-19 to 2021-25)

Report on Mini Project

Analytics of Placements at NMAMIT

Course Code: 21CSA31

Course Name: R Programming

Semester: III SEM Section: A

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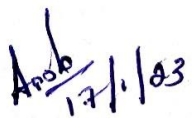

Signature of Course Instructor

ABSTRACT

This mini project is all about Data Visualization using R programming Language. ‘R’ supports creation of visually appealing data visualizations and it has got diverse functionalities to support the purpose.

The main idea behind this mini project is to analyze the placement activities at NMAMIT, Nitte and to Visualize the results. It includes the placement activities within the campus from past 3 years. We have worked on the data related to different companies that visit the campus for placement drives and the number of job opportunities offered by them. The collected data was segregated and was used for Analytics and Visualization. Graphs are plotted for different sets of data as a part of data Visualization.

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INTRODUCTION

Data visualization is a technique used for the graphical representation of data. By using elements like scatter plots, charts, graphs, histograms, maps, etc., we make our data more understandable. Data visualization makes it easy to recognize patterns, trends, and exceptions in our data. It enables us to convey information and results in a quick and visual way.
It is easier for a human brain to understand and retain information when it is represented in a pictorial form. Therefore, Data Visualization helps us interpret data quickly, examine different variables to see their effects on the patterns, and derive insights from our data.

R is a language that is designed for statistical computing, graphical data analysis, and scientific research. It is usually preferred for data visualization as it offers flexibility and minimum required coding through its packages.

Based on our topic we have made use of appropriate data set in order to demonstrate Data visualization as Part of Analytics of Placements at NMAMIT, Nitte.

PROBLEM STATEMENT

The aim of this project is to analyze placement activities at NMAMIT, Nitte and to visualize the analyzed data using ‘R’.

OBJECTIVES

- Collection of data related to placement drives taking place at the campus.
- Segregation of collected data into different sub-topics.
- Implementation of the data for framing graphs as a part of ‘Data Visualization’.
- Demonstration of working of different ‘R’ packages.

METHODOLOGY

- Collection of the data.
- Segregation of data according to the approach followed.
- Implementing the data in the form of (csv) comma separated files.
- Making use of built in R packages such as ‘ggplot2’, ‘plotrix’, ‘tidyverse’, ‘ggsci’, ‘ggpubr’,’ggrepel’etc.
- Use of different R functions and plotting the graphs.

Packages used: -

1. ggplot2: -ggplot2 is a plotting package that provides helpful commands to create complex plots from data in a data frame. It provides a more programmatic interface for specifying what variables to plot, how they are displayed, and general visual properties.
2. Tidyverse: -The tidyverse package includes ggplot2 for data visualization and dplyr for data manipulation and many other packages. It provides an efficient, fast and welldocumented workflow for visualization tasks.
3. ggpubr: -The ggpubr R package facilitates the creation of beautiful ggplot2-based graphs for researcher with non-advanced programming backgrounds. Makes it easy to arrange and annotate multiple plots on the same page, change graphical parameters such as colors and labels.
4. ggrepel: -This package Provides text and label geoms for 'ggplot2' that help to avoid overlapping text labels. Labels repel away from each other and away from the data points.
5. Ggsci: - ‘ggsci’ offers a collection of ggplot2 color palettes inspired by scientific journals, data visualization libraries, science fiction movies, and TV shows.

IMPLEMENTATION

R code for data visualization:

For year 2019-20:

```
library(ggplot2)
library(dplyr)
#Branch-wise Placements at NMAMIT (2019-20)
df=data.frame(offers=c(20,88,31,158,230,114,9),branch=c("civil","Mechanical"
,"E&E","E&C","CSE","ISE","Biotechnology"))
df
hsize <- 2
df <- df %>%
mutate(x = hsize)
ggplot(df, aes(x = hsize, y = offers, fill = branch)) +
geom_col(color = "black") +  geom_text(aes(label = offers),position =
position_stack(vjust = 0.5)) +  coord_polar(theta = "y") +labs(title = "Branch
-wise Placements at NMAMIT (2019-20)")+scale_fill_manual(values = c("red"
,"blue","green","yellow","coral1" ,"pink","mediumorchid")) +xlim(c(0.2, hsize +
0.5)) +theme(panel.background = element_rect(fill = "white"),panel.grid =
element_blank(),axis.title = element_blank(),axis.ticks = element_blank(),
axis.text = element_blank())

#Company-Wise interships at NMAMIT (2019-2020)
df2=data.frame(companies=c("DELL","RBEI","Vlinder Labs","Mercedes Benz"
,"Juniper","Mobiezy","Yokogawa","Laurus","AIBOD","Ritsumeikan","L&T"),offers=c
(2,1,3,3,6,2,2,3,2,3,3))
df2
theme_set(theme_bw())
ggplot(df2, aes(x=companies, y=offers)) + geom_bar(stat="identity", width=.5,
fill= "royalblue2"  ) + labs(title="Company-Wise interships at NMAMIT (2019
-2020)") +theme(axis.text.x = element_text(angle=65, vjust=0.6))

#Branch-wise Internships at NMAMIT (2019-20)
library(plotrix)
data3 <- c(1,1,2,2,7,1,5)
lab <- paste(round(data3/sum(data3) * 100, 2),"%")
pie3D(data3,col = rainbow(7),labels = lab,explode = 0.05,labelcex=1,theta=0.8
,main="Branch-wise Internships at NMAMIT (2019-20)",border="black")
legend(.70,1.05,c ("CIVIL","ME","E&E","E&C","CS","IS","MCA"),cex=0.6,fill
=rainbow(7))
```

For year 2020-21:

```
library(ggplot2)
library(plotrix)
library(tidyverse)
library(ggsci)
library(ggpubr)
library(ggrepel)
#Company wise Placements at NMAMIT 2021-22
data=read.csv("2020-2021company-wise-Placements.csv")
data
ggplot(data,aes(Companies,No.of.Offers)) + geom_bar(stat="identity",width=0.8
,fill="turquoise3")+  scale_y_continuous(limits = c(0,190))+ theme(axis.text.x
=element_text(angle=90,size=6))+labs(title = "Company wise Placements at NMAMIT
2021-22")

#graph 2-COmpany wise internships
data5 <- c(2,1,2,1,1,2,5,3,1,8,4,1,7,2)
x <- c("sony India","Dell Technologie","mscripts","LeadSquared","Aptean India
Pvt Ltd","Juniper Networks","ACI worldwid","Laurus Infosystems","Mobiezy","Diya
Systems (Glowtouch)","Krishi Tantra","Bang Design Private Limited","Climber
Knowledge & Careers Private Limited","Integrum Technologies")
barplot(data5,names.arg=x,ylab="Internship offers",col=heat.colors(6),cex.names
= 0.55,las=3, main="Company-Wise Internship opportunities at NMAMIT (2020-21)"
,border="black")
#graph 3-Branch wise
df=data.frame(offers=c(356,25,219,68,109,19,214,121),branch=c("CSE","CIVIL"
,"ISE","E&E","ME","BIOTECH","E&C","MCA"))
df2<- df %>%
mutate(csum = rev(cumsum(rev(offers))), pos = offers/2 + lead(csum, 1), pos =
if_else(is.na(pos), offers/2, pos))
ggplot(df, aes(x = "" , y = offers, fill = fct_inorder(branch))) +geom_col
(width = 1, color = 1) +coord_polar(theta = "y") +scale_fill_brewer(palette =
"Pastel1") +geom_label_repel(data = df2,aes(y = pos, label = paste0(offers)),
size = 4.5, nudge_x = 1, show.legend = FALSE) +guides(fill = guide_legend(title
= "Branch")) +theme_void()+labs(title = "Company wise Placements at NMAMIT 2021
-22")
```

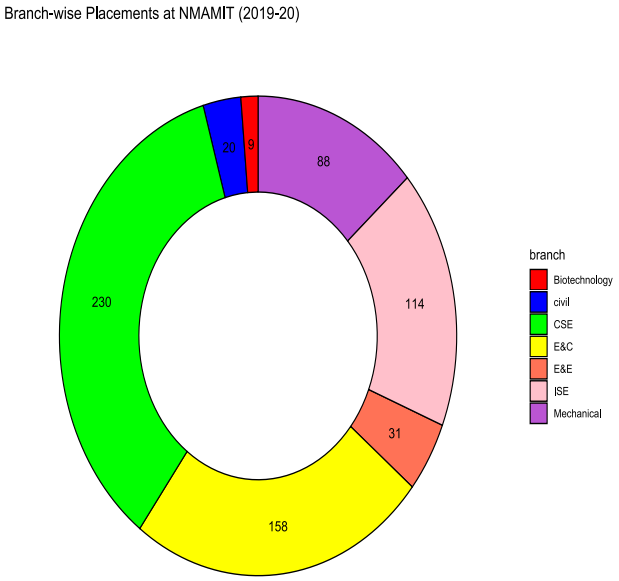
For year 2021-22:

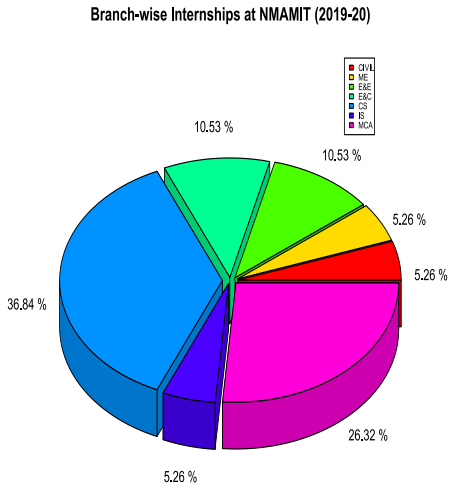
```
library(ggplot2)
library(plotrix)
library(tidyverse)
library(ggsci)
library(ggpubr)
#company-wise placements NMAMIT (2021-22)
data=read.csv("cwp.csv")
data
ggplot(data,aes(Companies,No.of.Offers)) + geom_bar(stat="identity",width=0.8)+
scale_y_continuous(limits = c(0,270))+ theme(axis.text.x=element_text(angle=90
,size=6))+labs(title = "Company wise Placements at NMAMIT 2021-22")
```

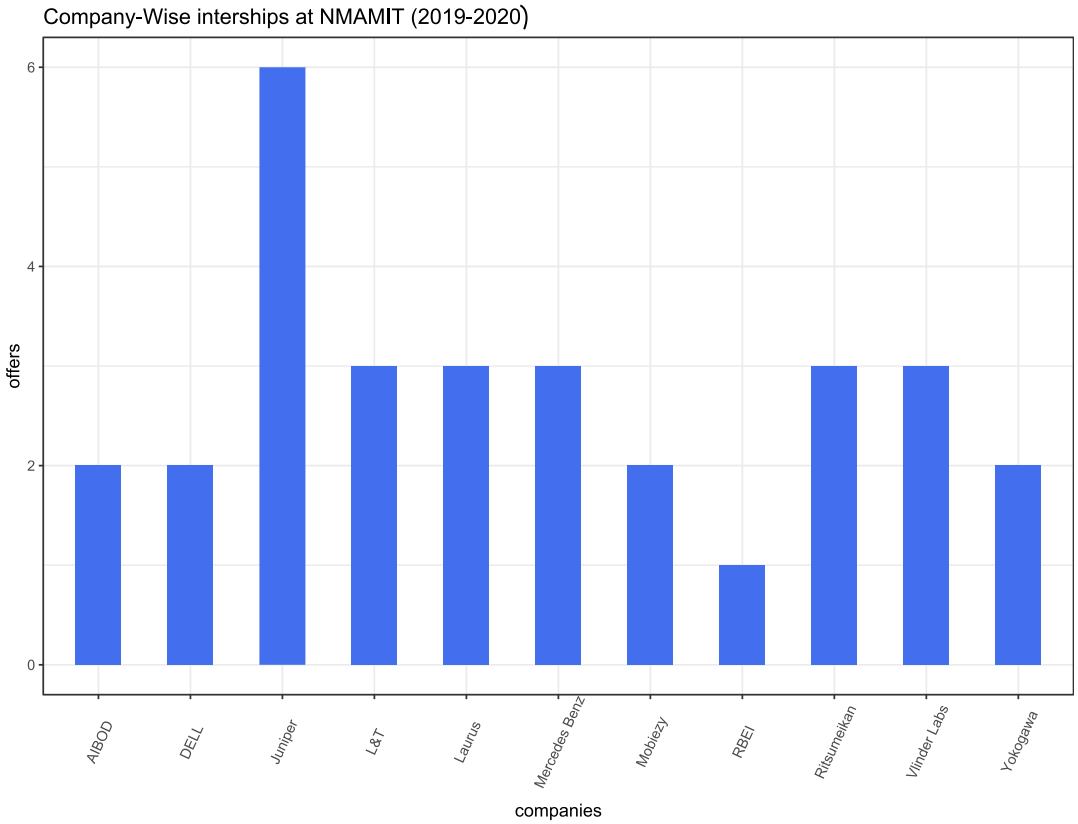
```
#All year placements Line graph
data1=read.csv("ayp.csv")
data1
ggplot(data=data1,
       mapping = aes(x= YEAR, y=Placement.Offers))+
  geom_point( size=5)+  geom_line(colour="red")+labs(title = "Placements at
NMAMIT (2015-2022)")

#All Year Internship line-Graph
data2=read.csv("ayi.csv")
data2
ggplot(data=data2,
       mapping = aes(x= YEAR, y=Internship.offers))+
  geom_point( size=5)+  geom_line(colour="red")+labs(title = "Internship
Opportunities at NMAMIT (2018-2022)")
#Branch-wise internship pie chart
data3=read.csv("bwi.csv")
data3
class(data3)
p=round(data3$Total.Number.of.Selections/sum(data3$Total.Number.of.Selections
)*100)
id1=paste(round(p),"%-",sep = "")
id2=data3$Branch
id3=paste(id1,id2)
id3
pie(data3$Total.Number.of.Selections,main = "Branch-Wise Internships at NMAMIT
(2021-22)",col = rainbow(9),id3,border='black')

#Branch-wise placements 3D pie chart
library(plotrix)
data4 <- c(219,356,68,109,19,25,214,121)
lab <- paste(round(data4/sum(data4) * 100, 2),"%")
pie3D(data4,col = rainbow(8),labels = lab,explode = 0.05,
      labelcex=1.15,theta=0.8,main="Branch-wise Placements at NMAMIT (2021-22)"
,border="white")
legend(.70,1.05,c ("ISE","CSE","E&E","ME","BIOTECH","CIVIL","E&C","MCA"),cex=0
.65,fill=rainbow(8))
#company-wise internships Bar Graph
data5 <- c(2,2,5,2,14,4,4,13,4,2,5,1,1,4,1,2)
x <- c("Nutanix","Robert Bosch","ACI Worldwide","Informatica","Jupiter
Networks","Amazon","Laurus systems","Utthunga Tech"," Mobiezy","Triphase Tech"
,"All State","Yokogawa","Navya Tech","Prodigy Tech","Nextuple","Tayana
Software")
barplot(data5,names.arg=x,ylab="Internship offers",col=rainbow(8),cex.names = 0
.55,las=3,
        main="Company-Wise Internship opportunities at NMAMIT (2021-22)",border
="black")
```

RESULTS AND DISCUSSIONS

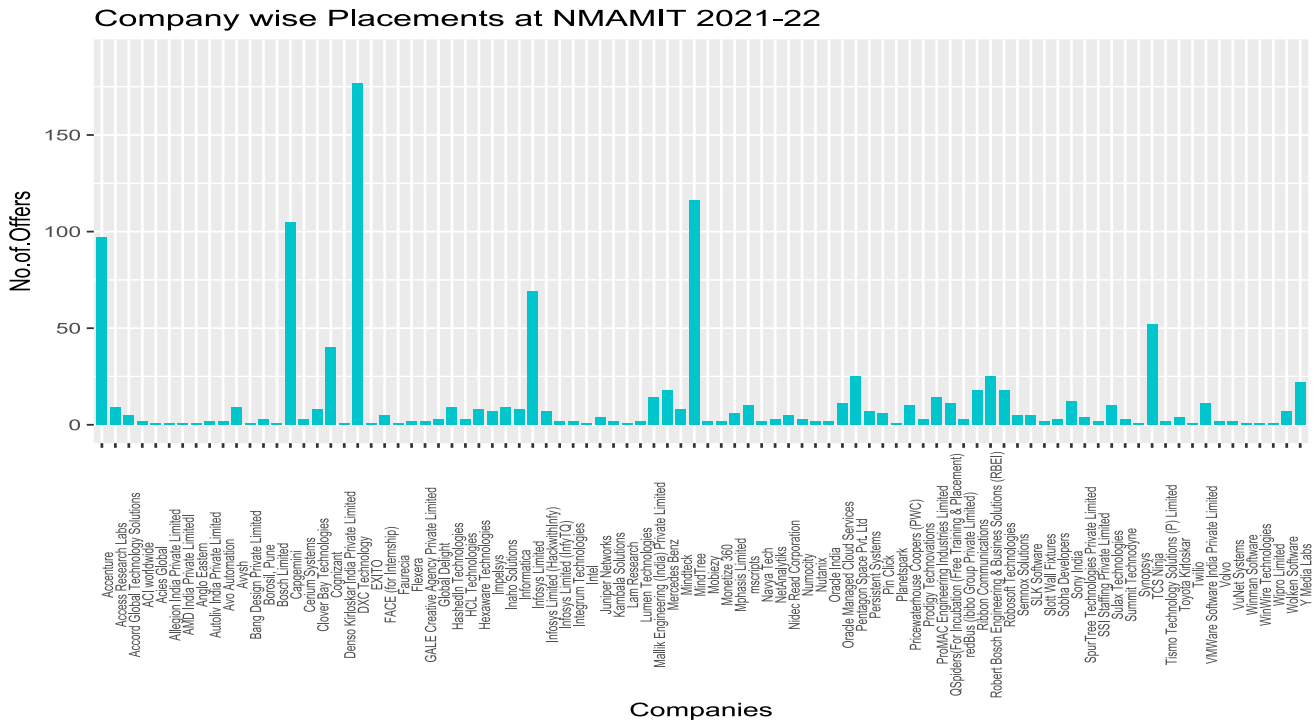
For year 2019-2020:

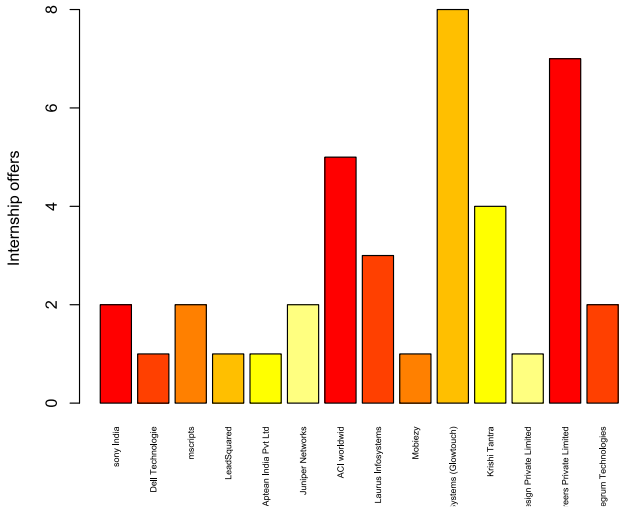


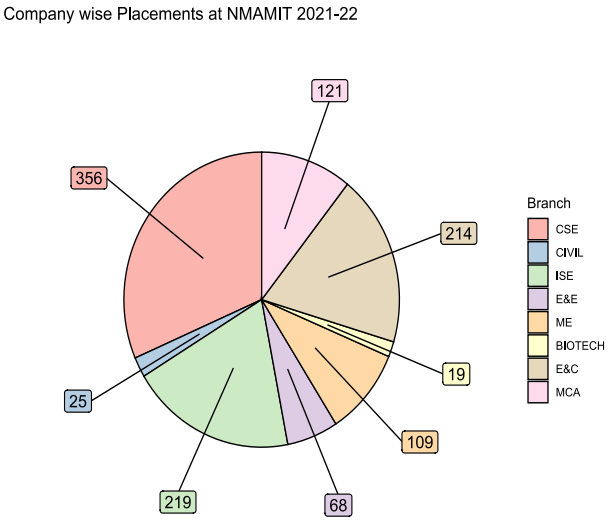




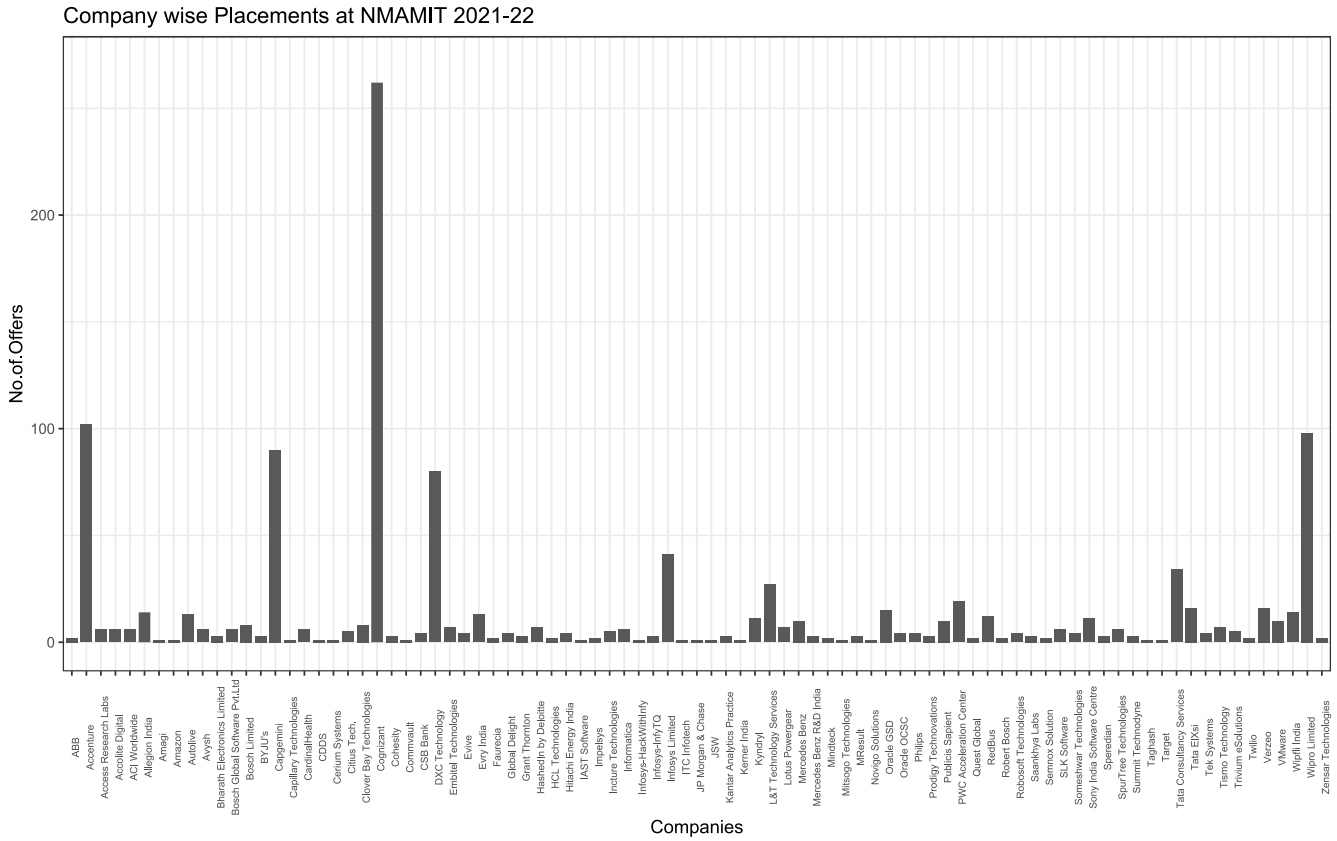
For year 2020-2021:

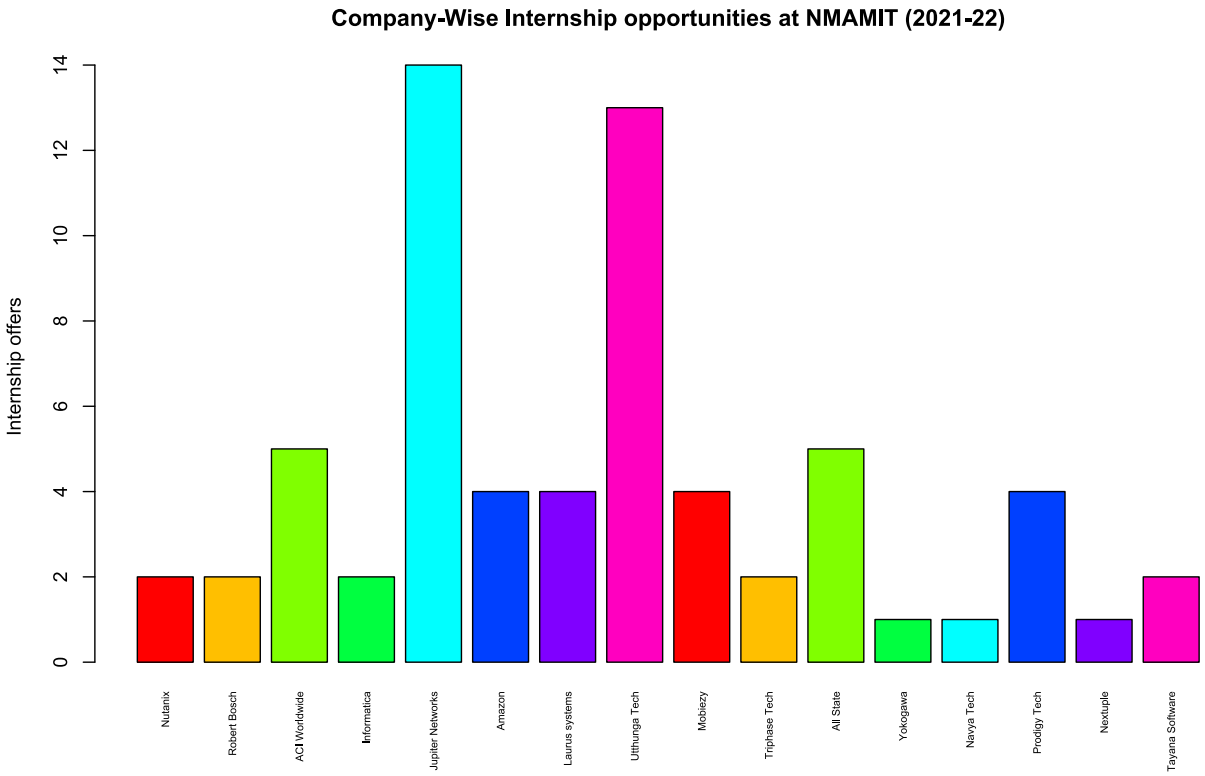




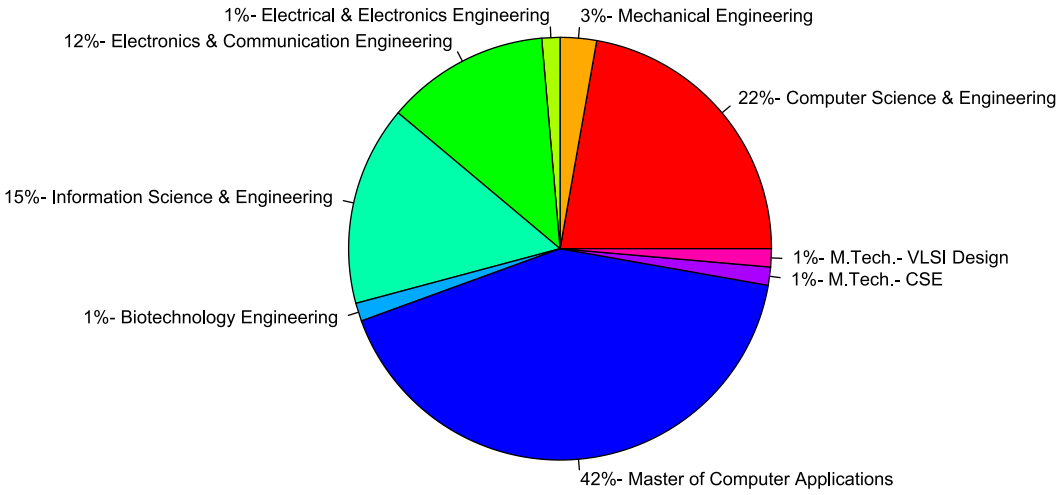


For year 2021-2022:

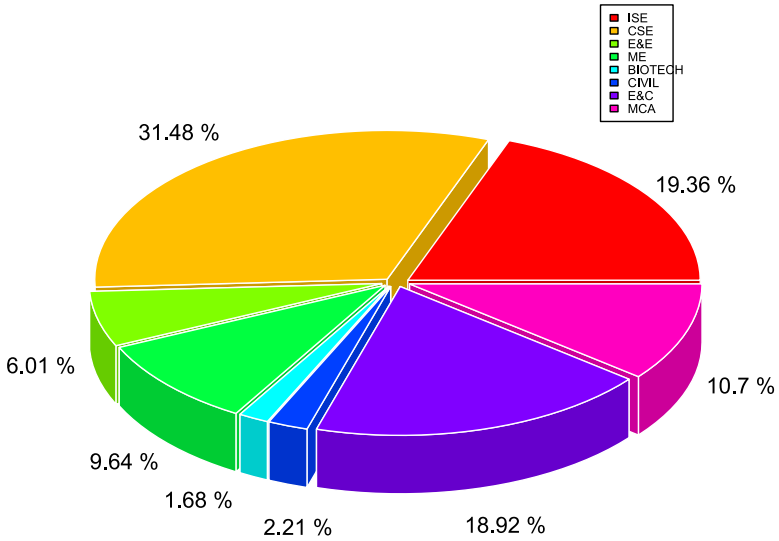




Branch-Wise Internships at NMAMIT (2021-22)



Branch-wise Placements at NMAMIT (2021-22)



CONCLUSION AND FUTURE SCOPE:

As a part of this mini project, we were able to keep track of how placements and internships varied along the years.

For year 2019-20:

- Maximum number of placements were bagged by Computer Science and Engineering branch.
- Accenture had offered 286 jobs.
- In total 791 jobs were offered.

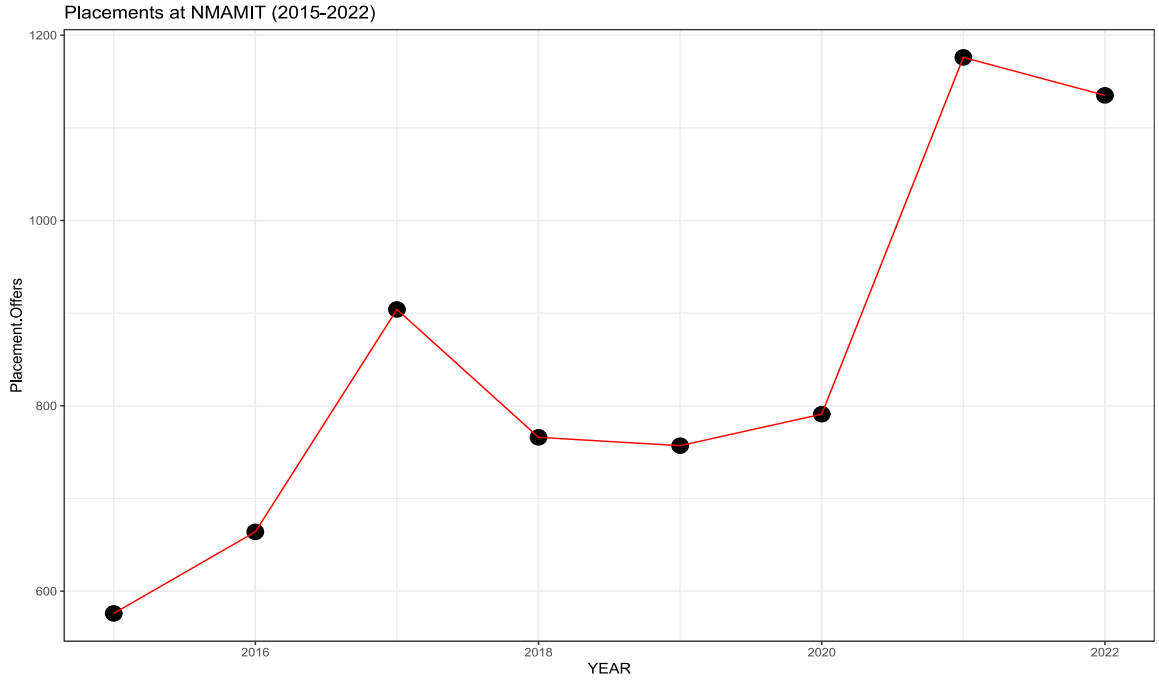
For year 2020-21:

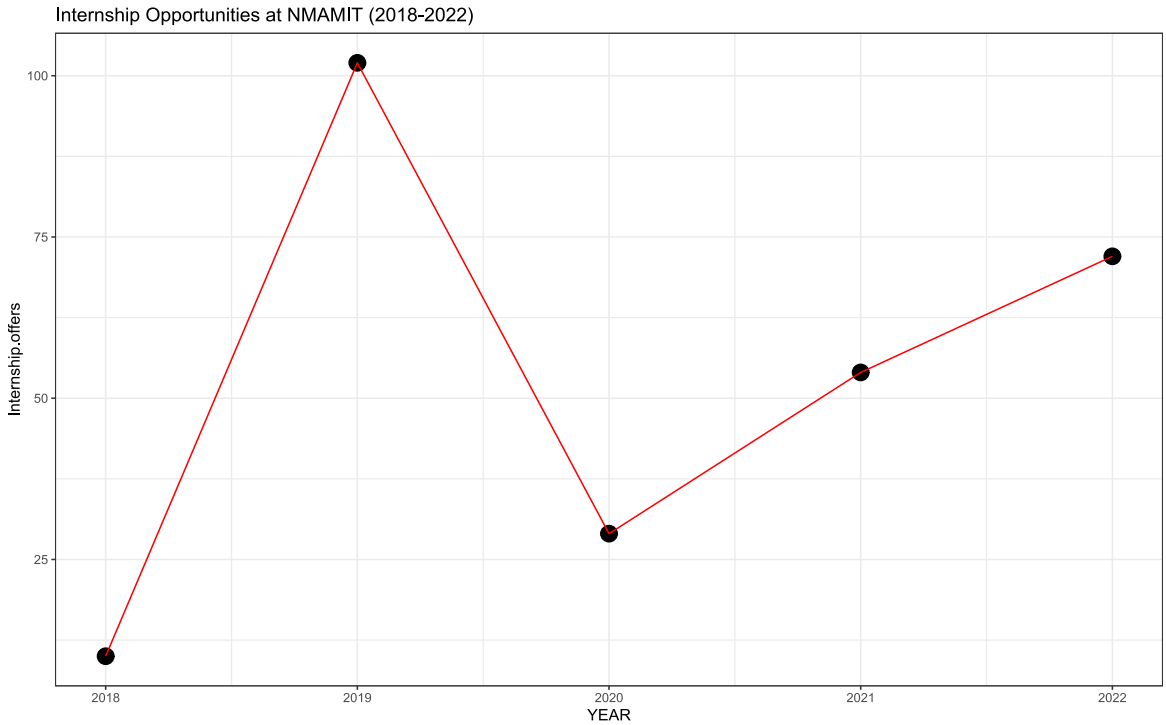
- 1176 jobs were offered by 90 different companies.
- 'DXC Technology' offered 177 jobs.
- In total 40 internships were offered by 14 different companies.

For year 2021-22:

- 1135 jobs were offered by 87 different companies.
- 'Cognizant' was the mass recruiter offering 262 jobs followed by 'Accenture' and 'Wipro' which offered 102 and 98 jobs respectively.
- Maximum number of placements were bagged by 'CSE' branch whereas maximum Internships were offered to 'MCA' students.

The following graphs depict the variation of Placements and Internships over last few years:





The above analysis gives a detailed overview of placement activities taking place in the campus. This analysis is helpful for the students who want to persue their technical education in the institute.

REFERENCES

[1] http://nmamit.in/placement/

[2] https://nmamit.nitte.edu.in/

[3] https://r-charts.com/