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Competency Mapping for Placement

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Abstract: Campus recruitment is the process by which the corporate recruit students who are about to graduate from the educational institutions. The selection process varies from company to company. Different companies hire students with different skills. As placement is one of the major concerns for the students in the final year of their graduation, this system provides them with better insights for the placement. It also facilitates the Training and Placement cell to increase the selection ratio and eases out the process of recruitment.

While Big Data is revolutionizing the IT world by solving the problem of handling the large datasets with performance and scalability, the overview is proposed in this paper which could handle the Big Data content. The system takes into account the data of the online employability skill assessment test of the students of a College. The qualitative and quantitative analysis is made on this data. It has the features which let the students to know their shortcomings in a particular domain of skills so that they can work on it and get well placed. It is based on complete modular architecture. This modularity of the architecture will allow us to replace or add modules in the future to enhance a particular feature of a particular situation.

Keywords: Campus recruitment, Training and Placement Cell, Big Data Analytics, Modular Architecture

I. INTRODUCTION

This research paper embarks on predicting the skill set indispensable to get better placements for college. This would help in determining which company hires students with which set of skills. That would in turn help students to better their skills so that they get selected for their dream company and have better chances for future growth and innovation.

Modelling the data for each year boils down to modelling the performance of students in each domain, forming the basis of the approach. So, the main idea behind this project is to design a model that improves competency mapping for students and help them to procure better placement opportunities. The goal is accomplished by first analyzing the status of placed and unplaced students for three consecutive years. Also, it is presumed that all the students did not participate in the process of online assessment leaving some scope for irregularity in trends. Furthermore, branch wise analysis is done for all the three consecutive years divulging the statistics of placement ratio. After drawing out vital facts from the placement data, now the dataset having an online assessment score is inspected to get placement ratio for the three successive years. Average score is taken as the criterion to get the count of placed and unplaced students. Moreover, average sectional score partition the dataset to get the count of placed and unplaced students. The process is done for all the three successive years and also for each branch separately. To get better insights and apprehend the trend of placement, company dataset is examined and mapped with previous data to see which company hires students with which set of skills. This is done by analyzing the company dataset thoroughly unveiling minimum and maximum compensation offered to the students. Technologies like Machine Learning, Big Data, Python, etc. have been employed to generalize the model so as to accomplish the desired goal. In order to do prediction online employment assessment data and placement analysis data are used as input parameters so as to discover the facts that would help to produce results and these results will not only help students to get better placement but also to perform even better from the very first day of joining the company. This would likely help the placement team to focus more on student's capabilities helping them to get better placements and design appropriate schemes to do so.

II. LITERATURE REVIEW

Training and Placement Cell is the major body of any educational institution which is responsible for catering the need of jobs for students and placement hereby is the area of prime concern for the students in the last year of their graduation. The literature investigated shows that there is a mismatch between the students' skills and the industry expectations. More than the technical skills and subjective knowledge there are other domains such as Aptitude, Reasoning and English which are given more weightage during the campus recruitment process. The survey has stated that in the existing system, all the processes are handled manually. In our system we have automated the processes which can give the results and draw comparisons shortly hence making the system more time preserving. Luan, Jing's paper for data mining provides easier ways to handle data of students. Baker, Ryan SJD and Kalina Yacef's paper show unique methods of data collection and sampling. The files were not stored in hierarchical format hence, searching was a big problem. Our system makes the analysis on student's data in a hierarchical manner and draws year wise comparisons on the dataset.

III. RESEARCH METHODOLOGY

In this paper, following methodologies have been employed.

A. MySql Workbench for storing the data whereas
B. PHP for designing the front end.

After exploring various ways to comprehend the data ,data sampling is used to segregate the data and produce results . Data sampling which is a statistical analysis based technique used to select, manipulate and analyze a representative subset of data points to identify patterns and trends in the larger data set being examined. This technique helped to identify the set of skills necessary for getting placed in a particular company while preserving other placement related information.

1) *MySQL Workbench:* MySQL Workbench is a unified visual tool for handling databases. It provides data modeling, SQL development, and comprehensive administration tools for server configuration, user administration, backup, and much more. It delivers tools for creating, executing, and optimizing SQL queries to produce results. The SQL Editor provides a platform to execute queries and infer results to ease analysis and draw observations.

2) *PHP:* PHP is a server scripting language and a powerful tool for making dynamic and interactive web pages. To design a system that improves competency mapping for students we have employed PHP as a tool to design the user interface. Users will be able to present the queries to the system using this interface which is mapped with the database to provide clear and concise results. PHP scripts are executed on the server and can generate dynamic page content. It can be used to create, open, read, write, delete and close files on the server. HTML is used to define the structure of web content whereas CSS to describe how the content will be displayed. These technologies have been applied to make the web page more interactive and control its layout . With the help of Python, representation of analyzed data is made possible which includes pie -chart. This representation enables users to make observations about the trends projected by the system, eventually helping them to better their skills in the right direction.

IV. ANALYSIS

The analysis has been done in the following categories:

A. *Year Wise Status Of Placed And Unplaced Students*

YEAR	TOTAL	PLACED	UNPLACED
nth	709	329	380
(n+1)	736	412	324
(n+2)	760	446	314

Table. 4.1

Branch Wise Status For NTH Year

BRANCH	PLACED	UNPLACED
CS	138	74
CIVIL	6	16
ECE	77	122
EN	32	63
IT	54	40
ME	22	65

Branch Wise Status For(n+1)th Year

BRANCH	PLACED	UNPLACED
CS	168	55
CIVIL	9	50
ECE	91	88
EN	28	42
IT	81	27
ME	35	62

Branch Wise Status For (n+2)th Year

BRANCH	PLACED	UNPLACED
CS	161	68
CIVIL	37	56
ECE	84	70
EN	32	28
IT	89	30
ME	42	62

B. *Year Wise Status Of Placed And Unplaced Students On The Basis Of XYZ SCOR*
1) *Status Of Placed And Unplaced Students For nth Year*

SCORE	PLACED	UNPLACED
EQUAL TO ABOVE AVERAGE	158	76
BELOW AVERAGE	171	304

Table. 4.2.1

2) *Status Of Placed And Unplaced Students For (n+1)th Year*

AVERAGE XYZ SCORE= 500

SCORE	PLACED	UNPLACED
EQUAL TO ABOVE AVERAGE	251	99
BELOW AVERAGE	171	232

Table. 4.2.2

3) *Status Of Placed And Unplaced Students For (n+2)th Year*

Average XYZ Score= 500

SCORE	PLACED	UNPLACED
EQUAL TO ABOVE AVERAGE	257	76
BELOW AVERAGE	189	238

Table. 4.2.3

C. *Year Wise Status Of Placed and Unplaced Students On The Basis Of Average Sectional Score Of Online Assessment Exam*

1) *Status Of Placed And Unplaced Students On The Basis Of Average Sectional Marks For Nth Year*

SECTION	PLACED	UNPLACED	DEBARRED
APTITUDE (AVG=45)	>=AVG= 123	>=AVG= 202	>=AVG= 22
	<AVG= 127	<AVG= 209	<AVG= 26
QUANTITATIVE (AVG=35)	>=AVG= 177	>=AVG= 122	>=AVG= 23
	<AVG= 152	<AVG= 210	<AVG= 25
ENGLISH (AVG=50)	>=AVG= 205	>=AVG= 139	>=AVG= 22
	<AVG= 124	<AVG= 193	<AVG= 26
DOMAIN (AVG=37)	>=AVG= 194	>=AVG= 118	>=AVG= 24
	<AVG= 135	<AVG= 214	<AVG= 24

Table. 4.3.1

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2) *Status Of Placed And Unplaced Students On The Basis Of Average Sectional Marks For (n+1)th Year*

SECTION	PLACED	UNPLACED	DEBARRED
APTITUDE (AVG=45)	>=AVG= 259	>=AVG= 126	>=AVG= 12
	<AVG= 152	<AVG= 182	<AVG= 4
QUANTITATIVE (AVG=35)	>=AVG= 239	>=AVG= 117	>=AVG= 9
	<AVG= 173	<AVG= 190	<AVG=8
ENGLISH (AVG=50)	>=AVG= 255	>=AVG= 145	>=AVG= 12
	<AVG= 155	<AVG= 163	<AVG= 6
DOMAIN (AVG=37)	>=AVG= 245	>=AVG= 129	>=AVG= 9
	<AVG= 166	<AVG= 178	<AVG= 8

Table. 4.3.2

3) *Status Of Placed And Unplaced Students On The Basis Of Average Sectional Marks For (n+2)th Year*

SECTION	PLACED	UNPLACED	DEBARRED
APTITUDE (AVG=45)	>=AVG= 257	>=AVG= 90	>=AVG= 3
	<AVG= 189	<AVG= 209	<AVG= 12
QUANTITATIVE (AVG=35)	>=AVG= 251	>=AVG= 118	>=AVG= 5
	<AVG= 195	<AVG= 181	<AVG= 10
ENGLISH (AVG=50)	>=AVG= 251	>=AVG= 109	>=AVG= 9
	<AVG= 195	<AVG= 190	<AVG= 6
DOMAIN (AVG=37)	>=AVG= 235	>=AVG= 146	>=AVG= 5
	<AVG= 211	<AVG= 153	<AVG= 10

Table 4.3.3

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D. Branch Wise Status Of Placed And Unplaced Students On The Basis Of Average Sectional Score Of Online Assessment Exam

1) FOR (n)th YEAR

Aptitude Average= 45

SECTION	PLACED		UNPLACED+ DEBARRED	
APTITUDE (AVG=45)	=>AVG	<AVG	>=AVG	<AVG
CS	99	39	31	43
CIVIL	3	3	10	6
ECE	39	38	51	71
EN	16	16	18	45
IT	33	21	14	26
ME	12	10	21	44

English Average= 50

SECTION	PLACED		UNPLACED+ DEBARRED	
ENGLISH (AVG=50)	=>AVG	<AVG	>=AVG	<AVG
CS	93	45	32	42
CIVIL	3	1	9	7
ECE	42	35	53	69
EN	19	13	25	38
IT	35	19	20	20
ME	11	11	22	43

Domain Average= 37

SECTION	PLACED		UNPLACED+ DEBARRED	
DOMAIN (AVG=37)	=>AVG	<AVG	>=AVG	<AVG
CS	93	45	22	52
CIVIL	6	0	13	3
ECE	43	34	41	81
EN	15	17	19	44
IT	22	32	15	25
ME	15	7	32	33

Quantitative Average= 35

SECTION	PLACED		UNPLACED+ DEBARRED	
QUANTITATIVE (AVG=35)	=>AVG	<AVG	>=AVG	<AVG
CS	91	47	29	45
CIVIL	2	4	8	8
ECE	37	40	49	73
EN	13	19	21	42
IT	24	30	12	28
ME	10	12	26	39

2)   FOR (n+1)th YEAR

Aptitude Average= 49

SECTION	PLACED		UNPLACED+ DEBARRED	
APTITUDE (AVG=49)	=>AVG	<AVG	>=AVG	<AVG
CS	125	45	31	22
CIVIL	5	6	21	29
ECE	44	47	31	60
EN	12	16	13	29
IT	56	23	10	15
ME	17	15	32	32

English Average= 52

SECTION	PLACED		UNPLACED+ DEBARRED	
ENGLISH (AVG=52)	=>AVG	<AVG	>=AVG	<AVG
CS	117	56	31	22
CIVIL	5	4	19	31
ECE	51	39	42	51
EN	14	14	16	25
IT	47	31	13	14
ME	21	11	36	26

Domain Average= 38

SECTION	PLACED		UNPLACED+ DEBARRED	
DOMAIN (AVG=38)	=>AVG	<AVG	>=AVG	<AVG
CS	118	56	21	35
CIVIL	6	5	23	26
ECE	50	38	47	43
EN	11	17	11	30
IT	35	41	5	21
ME	25	9	31	31

Quantitative Average= 38

SECTION	PLACED		UNPLACED+ DEBARRED	
QUANTITATIVE (AVG=38)	=>AVG	<AVG	>=AVG	<AVG
CS	119	53	28	28
CIVIL	4	7	17	33
ECE	41	49	31	57
EN	11	18	12	28
IT	49	29	9	19
ME	15	17	29	33

3) FOR (n+2)th YEAR

Aptitude Average= 50

SECTION	PLACED		UNPLACED+ DEBARRED	
APTITUDE (AVG=50)	=>AVG	<AVG	>=AVG	<AVG
CS	112	49	17	51
CIVIL	6	31	18	38
ECE	43	41	23	47
EN	18	14	8	20
IT	57	32	7	23
ME	21	21	20	42

English Average= 51

SECTION	PLACED		UNPLACED+ DEBARRED	
ENGLISH (AVG=51)	=>AVG	<AVG	>=AVG	<AVG
CS	103	58	30	38
CIVIL	13	24	21	35
ECE	43	41	26	44
EN	17	15	9	19
IT	53	36	12	18
ME	22	20	20	42

Domain Average= 40

SECTION	PLACED		UNPLACED+ DEBARRED	
DOMAIN (AVG=40)	=>AVG	<AVG	>=AVG	<AVG
CS	88	73	22	46
CIVIL	25	12	40	16
ECE	37	47	30	40
EN	14	18	12	16
IT	48	41	9	21
ME	23	19	38	24

Quantitative Average= 42

SECTION	PLACED		UNPLACED+ DEBARRED	
QUANTITATIVE (AVG=40)	=>AVG	<AVG	>=AVG	<AVG
CS	105	56	24	44
CIVIL	11	26	17	39
ECE	44	40	32	38
EN	19	13	13	15
IT	49	40	9	21
ME	23	19	28	34

E. *Company Wise Placement Statistics*

1) *For the nth year*

COMPANY NAME	CIVIL	EN	IT	CSE	ME	EC
1	1	5	10	33	3	11
2	-	-	5	17	-	-
3	5	2	4	7	2	7
4	-	1	-	15	-	6
5	-	-	1	15	-	-

Table. 4.5.1

2) *For (n+1)th year*

COMPANY NAME	CIVIL	EN	IT	CSE	ME	EC
1	-	-	16	25	7	2
2	-	-	6	28	-	6
3	4	1	6	10	2	5
4	-	1	6	27	1	16
5	-	-	3	14	-	-

Table. 4.5.2

3) *For (n+2)th year*

COMPANY NAME	CIVIL	EN	IT	CSE	ME	EC
1	4	3	23	60	4	19
2	-	-	4	7	-	-
3	3	1	9	16	2	11
4	-	2	4	5	-	6
5	-	-	3	9	-	-

Table. 4.5.3

V.   RESULTS

A. Pie-Chart Representation Of Yearly Classified Data

1) We can clearly see that for the nth batch, the percentage of placed students is 55.40% whereas 44.60% of students remained unplaced.
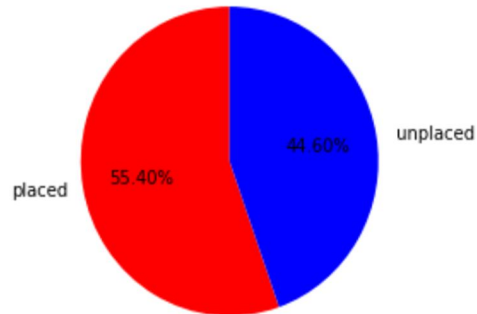
Fig 5.1.1 (for nth year)

2) We can clearly see that for the (n+1)th batch, the percentage of placed students has improved from the previous year batch. This year the percentage of placed students is 65.64% whereas only 34.36% students remained unplaced.
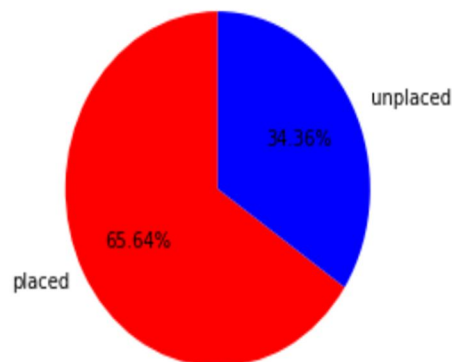
Fig 5.1.2 (for (n+1)th year)

3) We can clearly see that for the (n+2)th batch, the percentage of placed students has improved even more from the previous two year batches. This year the percentage of placed students is 68.92% whereas only 31.08% students remained unplaced.
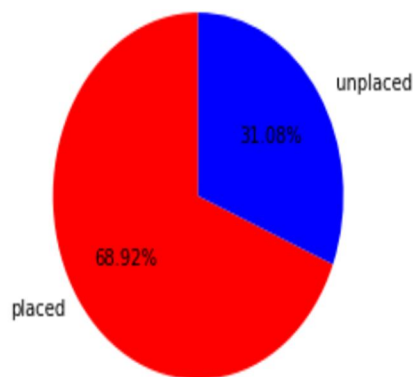
Fig 5.1.3 (for (n+2)th year)

B.   Pie-Chart Representation Of Classification Based On Online Assessment Score

In this category, the results have been drawn considering the scores of online assessment examination. The analysis has been done by taking the average score obtained by students of that particular session.

1)   *For the nth year*: The below pie-chart represents the percentage of placed and unplaced students who have scored above or below the average score in the nth session . We can easily infer that out of students who scored above the average 27% are placed whereas only 8.92% remained unplaced. Out of students who have marks below average 28.40% are placed whereas 35.68% remained unplaced.
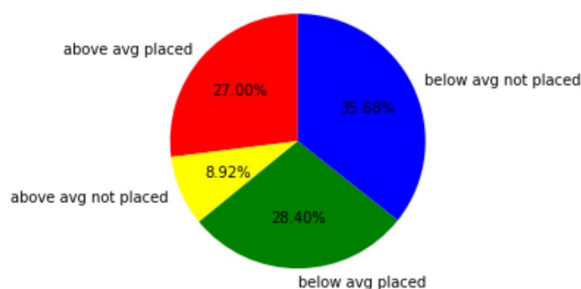
Fig 5.2.1 (for nth year)

2)   *For the (n+1)th year* : The below pie-chart represents the percentage of placed and unplaced students who have scored above or below the average score in the (n+1)th session . We can easily infer that out of students who scored above the average 40.79% were placed whereas only 9.98% remained unplaced. Out of students who have marks below average 24.86% are placed whereas 24.38% remained unplaced.
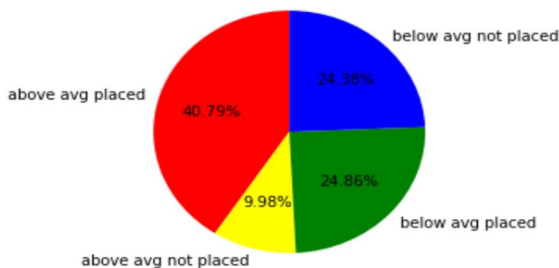
Fig 5.2.2 (for (n+1)th year)

3)   *For the (n+2)th year*: The below pie-chart represents the percentage of placed and unplaced students who have scored above or below the average score in the (n+2)th session. We can easily infer that out of students who scored above the average 41.63% are placed whereas only 7.74% remained unplaced. Out of students who have marks below average 27.09% are placed whereas 23.54% remained unplaced.
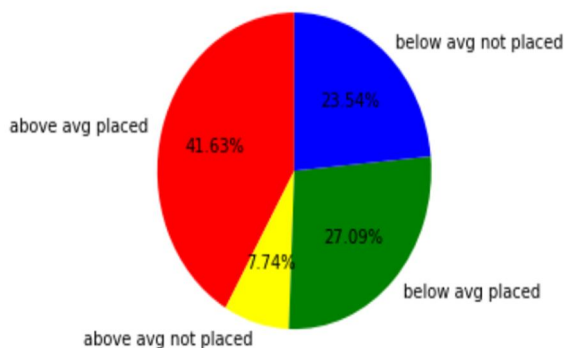
Fig 5.2.3 (for (n+2)th year)

C. Branch Wise Recruitment Percentage For Various Companies

1) For Company 1: The analysis for Company1 based on placement percentage of several branches (CSE ,ECE, EN, IT ,ME, Civil) for three subsequent years n, (n+1), (n+2) are displayed as:
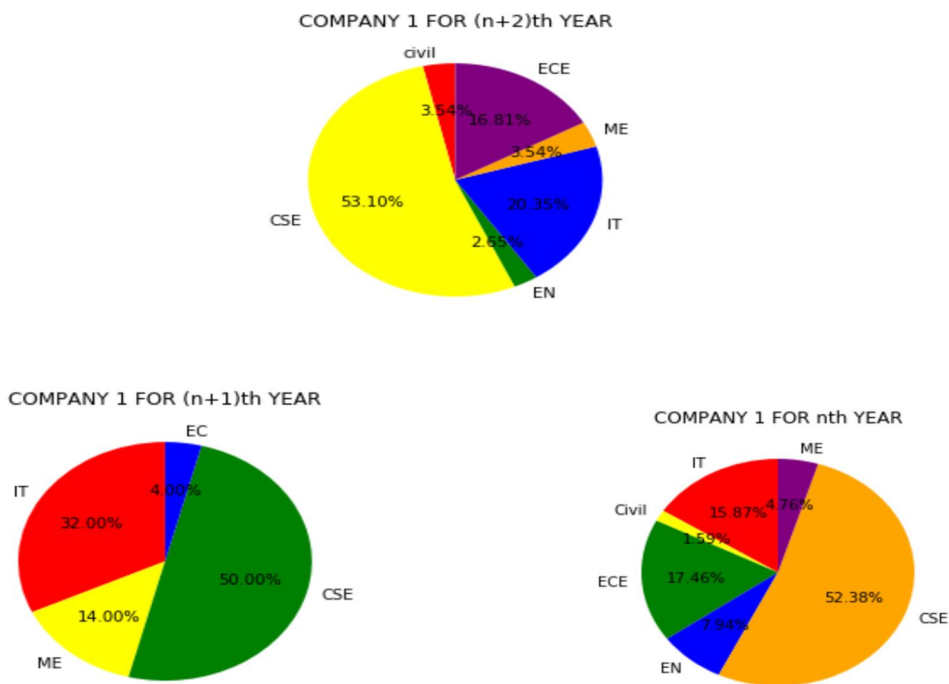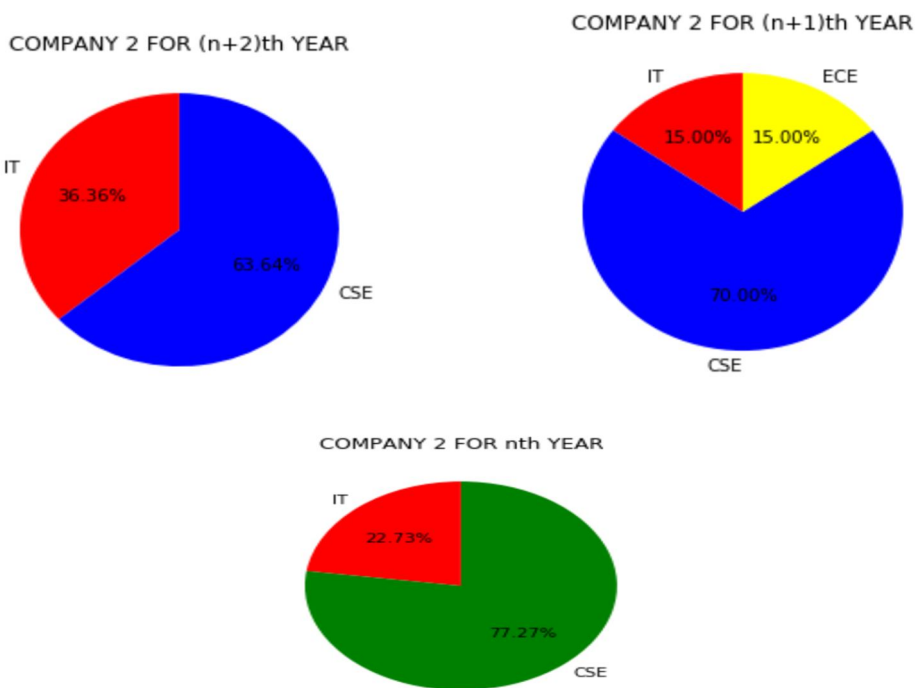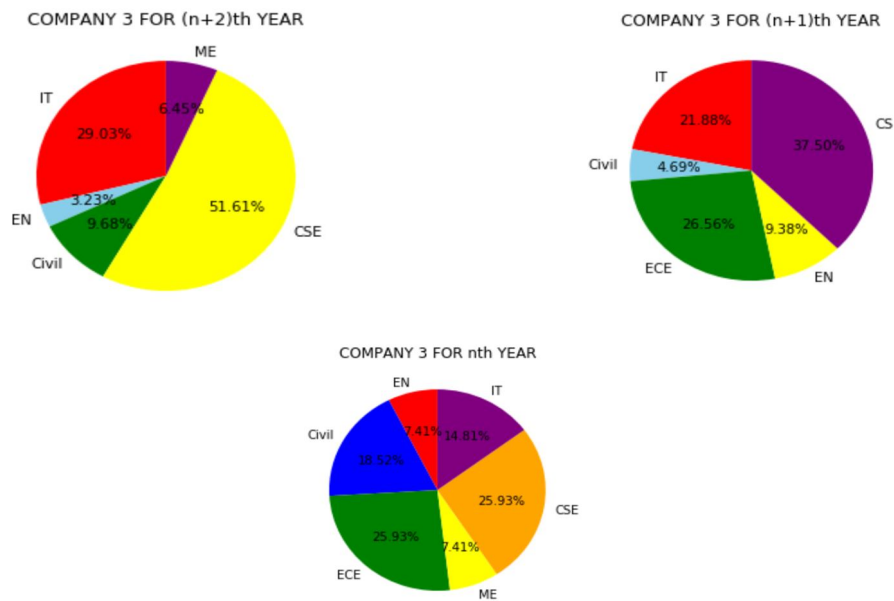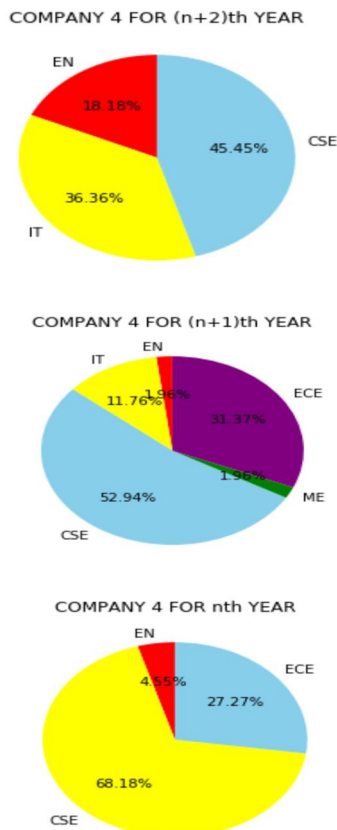

Fig. 5.3.1

2) For Company 2: The analysis for Company2 based on placement percentage of several branches (CSE, ,EN, IT, ME, Civil) for three subsequent years n, (n+1), (n+2) are displayed as:

Fig. 5.3.2

3) *For Company 3*: The analysis for Company3 based on placement percentage of several branches (CSE,ECE,EN,IT,ME,Civil) for three subsequent years n, (n+1), (n+2) are displayed as:

Fig. 5.3.3

4) *For Company 4*: The analysis for Company4 based on placement percentage of several branches (CSE, ECE, EN, IT, ME, Civil) for three subsequent years n,(n+1),(n+2)are displayed as:

Fig. 5.3.4

VI.   CONCLUSIONS

Various conclusions can be drawn on the basis of analysis done .These are-

A.   As per the analysis of placement records for the three successive years(nth ,(n+1)th and (n+2)th) ,it is evident that each year the count of placed students has shoot up which signifies that there are chances of more students being hired in future .Also the count of unplaced students has diminished.

B.   Branch wise status of placement statistics reveal that for the branches CSE and IT more placed students were reported but for the branches like ME,Civil,ECE and EN a large portion of students remained unplaced.While drawing comparison among the branches it was noticed that the branches(CSE and IT) have more placed students than unplaced ones but for the branches(ME,Civil,ECE and EN)unplaced students count more than the placed ones.

C.   When Online Assessment data is queried to get information about placement statistics for the three consecutive years,it is identified that the count of students who scored above average is more than those who scored below average.

D.   When the data was analyzed as per different sections, it is inferred that only some of the sections(Quantitative ,Aptitude, English) majorly affect the placement ratio whereas section like Domain has moderate affect and the section like Coding has impact on certain branches only. Branches such as CSE and IT have a considerable effect of coding section in the placement ratio, ECE has some impact whereas branches like Civil, EN and ME do not consider Coding sections for placement.

E.   Placement Trend Of Companies In Various Years

1)   *For Company 1:* This company is a global leader in technology services and consulting. It looks for students having good communication skills and aptitude. The placement trend for the three subsequent years can be seen in the fig 6.5.1 It can be deduced that initially the company hired less number of students but afterwards an increment was noticed in the placement analysis.
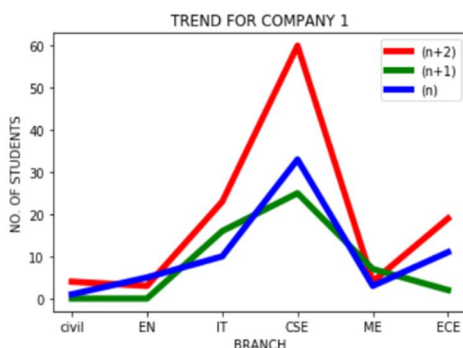

Fig. 6.5.1

2)   *FOR COMPANY 2:*This company is a leading provider of performance intelligence platform and from the below trend it can be inferred that initially an increment in the number of hired students was witnessed but after that a tremendous fall was observed for the (n+2)th year.
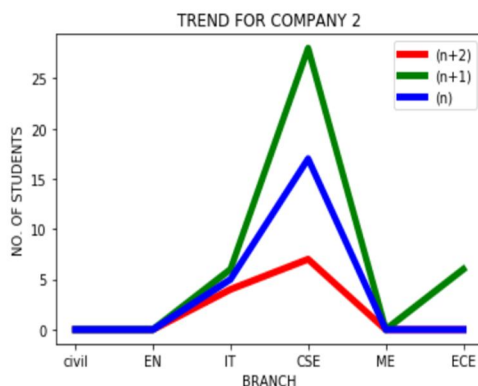

Fig. 6.5.2

3) *For Company 3:* This company mainly focuses on e-commerce, cloud computing, digital streaming and artificial intelligence. It hires enthusiastic and creative students to join the marketplace for business operations and data handling. Fig 6.5.3 depicts the trend for subsequent three years which shows that with each year placement statistics have improved.
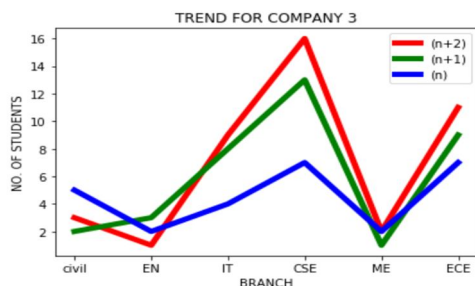

Fig.6.5.3

4) *For Company 4:* This is an Indian IT based company in the Banking and Financial Services sector.This company mainly recruits students with good command over basics of banking and lending along with prior knowledge of some programming languages .The trend shows resemblance with Company 2 as initially number of hired students ascended and then a downfall was witnessed.
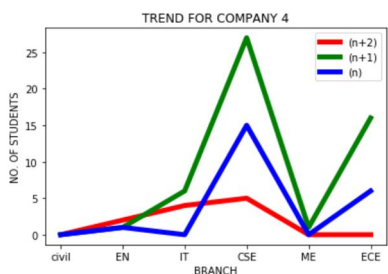
Fig. 6.5.4

5) *For Company 5:*It is an Information Technology Consultancy company which hires students with some prior technical skills and problem solving ability. Fig 6.4.5 shows that a constant toppling is seen in the trend for placement statistics of Company 5.
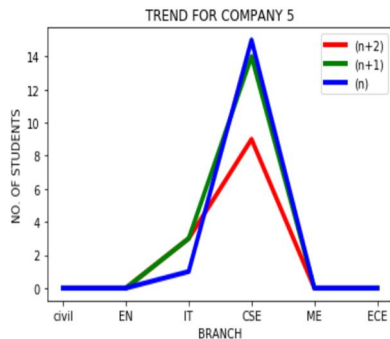

Fig. 6.5.5

VII. FUTURE SCOPE

The system can be extended to various other functionalities. We can include the dataset containing scores of other online assessment examinations. Through this we can draw the comparison among them providing a more clear view about the placement ratio in an institution i.e. scores of which assessment tests have more impact on the number of placements. Besides, we can find where any institution stands among various other institutions in a particular region. For this we need to collect the data of various institutions and analyse them. This will help us to find where our students lack and start focusing on such areas. This can help more and more students to get well placed and can make our institution best in the region.

VIII. ACKNOWLEDGEMENT

REFERENCES

[1] Ben- Hur, D. Horn, H. T. Siegelmann, V. Vapnik, "Support vector clustering", Journal of machine learning research, vol. 2, pp. 125-137, Dec 2001.

[2] Steven Finlay, Predictive Big Data. Myths Misconceptions and Methods, pp. 237, 2014, ISBN 1137379278.

[3] Prof. Rupali Komatwar," Placement Support System", IJARCCE, 2016.

[4] Luan, Jing. "Data Mining and Knowledge Management in Higher Education-Potential Applications" (2002).

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