**Introduction:**

As the IT industry is booming all over the world, more and more students are moving towards computer science to assure a prospective career. As a result more and more graduates are coming out every year. Ensuring jobs for this huge number of graduates is a difficult task for the universities. The size of the job market is much smaller compared to the number of graduates in Bangladesh. So it is a prime concern for all the universities of Bangladesh that offers Computer Science to the students to have a collaborative environment with the industry to help students getting jobs. So it is very important for the universities to have a proper idea about the running CS students, their interests, strengths & weaknesses and their prospects .This will help the university to serve proper manpower to the industry. But the number of students being pretty large, it is not an easy task for the universities to keep track of each and every students individually. The ability of predicting student’s career can serve the purpose of better understanding the students to help maintaining academia-industry collaboration. Besides, some students aren’t aware of their own interests and capabilities. So it can also be helpful in a way to ensure the students a proper counseling regarding their career.

Data Mining is a technique for finding useful patterns and mining knowledge from large amounts of data. Its popularity in the educational sector is much renowned.

Educational Data Mining is an emerging discipline, concerned with developing methods for exploring the unique types of data that come from educational settings, and using those methods to better understand students and the settings which they learn in [10].

As we are living in the data age, data in educational sector is increasing rapidly. Useful information and knowledge about students can be mined from this vast amount of data stored in different educational databases, such as, Result Portal, Student Portal, Admission Systems, Registration Systems, Course Management Systems, and Library Management Systems and so on. The main goal of research in this field is to discover useful knowledge to help both the administrative bodies regarding managerial purposes and students to get better in what they are pursuing.

Classification is a popular data mining technique to classify and predict class labels of variables. We used this technique to analyze successful alumni’s data (who are currently in job field) which is collected through a survey and predicted final year student’s career based on some quality attributes. We mainly looked into different quality aspects of the alumni during their undergrad period and their current job field. The quality attributes are considered as features and their current job field is considered as class labels. The models are trained with these data and predict the career of the running students who’ve completed their 3rd year considering their responses on the same quality aspects as test sets.

There are different classification techniques available. So we applied multiple classification techniques and did a comparative study among the classifiers regarding their performance. The model performance is measured by different aspects, such as: accuracy, precision, recall, f-measure, correctly classified instances and incorrectly classified instances.

**Review research:**

Beth Dietz-Uhler & Janet E. Hurn show the importance of using learning analytics in predicting and improving the student’s performance from a faculty perspective. They show the list of universities that used learning analytics, the learning analytics tools that are available and the way how faculty can make use of data to monitor and predict student performance[]. They emphasizes on several factors that have impact on the importance of students. Such as: interest, ability, strengths etc.

Roshani Ade & P. R. Deshmukh proposed an incremental learning approach for prediction of student’s career choice using pair of classifiers. Students’ scores from the psychometric test have been used as training dataset and the dataset contains 1333 records with 14 attributes []. The proposed incremental algorithm is an ensemble of a pair of classifiers. First classifier in the pair is for generating the hypothesis and the second one is for weight updating. The dataset is divided into several chunks and the hypothesis is generated for each of the chunks. The final hypothesis is selected using weighted majority voting rule []. They have obtained an accuracy of 90.8% for their proposed algorithm [].

Sudheep Elayidom, Dr. Sumam Mary Idikkula, and Joseph Alexander conducted a research to predict job absorption rate and waiting time needed for 100% job placement, for different engineering courses in India. They obtained the data about passed out students from NTMIS (National technical manpower information system) NODAL center in Kochi, India. The attributes extracted from the data are Roll no of the candidate; month and year he joined the company. They used linear regression technique to figure out the percentage of students that will be placed in a particular branch in a particular year in the future. For waiting time prediction for 100% placement, they calculated placement rate status for a particular batch for a period of every 3 months for each year. From this data, with the help of curve fitting concept and regression modeling, they predicted the time needed to attain 100% placement for the given batch. The purpose of job absorption rate prediction is to reduce the troubles of those who are responsible for displaying the statistics and also the students seeking for colleges which can guarantee them a secure future. Waiting time prediction is useful in the sense that more the waiting time for a branch, more will it indicates that intake for the coming years should be reduced.

Lokesh S. Katore, Bhakti S. Ratnaparkhi and Dr. Jayant S. Umale proposed C4.5 algorithm for career prediction and recommendation method based on personal traits. The dataset is collected via questionnaires answered by the students. They started with 110 instances with 12 attributes. Values of the attributes are gained from the answer of questions. They tried several algorithms (Simple Cart, K Star, Naïve Bayes and C4.5) for classification but the C4.5 achieved the highest accuracy of 86%. The aim of the research is to analyze the psychological condition of the students and recommend them career [].

Brijesh Kumar Bhardwaj and Saurabh Pal conducted a research on student’s performance prediction using classification. Predicting a student’s performance is very important in educational environments. Students’ academic performance is based upon diverse factors like personal, social, psychological and other environmental variables. They collected the data of passed out students from different degree colleges and institutions affiliated with Dr. R. M. L. Awadh University, Faizabad, India. They had 16 attributes initially. But they came up with 7 attributes (Students grade in Senior Secondary Education, Living Location, Medium of Teaching, and Mother’s Qualification, Students other Habit, Family annual income status and Students family status) after filtering attributes based on high potentiality of the variable. They used Naïve Bayes algorithm for classification.

Nikita Gorad, Ishani Zalte, Aishwarya Nandi & Deepali Nayak conducted a research on career counseling using data mining. The purpose of the research was to develop a system that helps a student studying in high school selecting a course for his/her career based on three factors: personality trait, interest and capacity. They collected the data via survey questions performed on the students studying in different courses and achieved the values of the three factors from the answers. They used C5 decision tree algorithm on the dataset to derive the decision tree for different courses. Based on the values of the three factors, the system helps the high school students to choose a course for their career using data mining algorithm.

Baradwaj and Pal conducted a research on performance prediction of the students based on attributes: ‘Previous Semester Marks’, ‘Class Test Grades’, ‘Seminar Performance’, ‘Assignments’, ‘General Proficiency’, ‘Attendance’, ‘Lab Work’ and ‘End Semester Marks’. They collected the data from VBS Purvanchal University, Jaunpur (Uttar Pradesh) on the sampling method of computer Applications department of course MCA (Master of Computer Applications) from session 2007 to 2010[]. The initial data size was 50. Based on the passed out student’s data, they predicted the existing student’s ‘End Semester Marks’ using ID3 decision tree algorithm. According to them, predicting student’s performance will help identifying those students which needed special attention to reduce fail ration and taking appropriate action for the next semester examination[].

Amjad Abu Saa conducted a research on performance prediction of the students using data mining. The objective of this study is to predict performance of the students in the upcoming semesters by discovering the relations between students’ personal and social factors, and their educational performance in the previous semester using data mining tasks[]. The data was collected via survey and initially 270 responses are recorded. From the data, 24 attributes are extracted. The model technique used is Classification. Different classification algorithms were run initially but eventually CART decision tree algorithm is selected as the classification model based on highest accuracy score.

Surjeet Kumar Yadav & Saurabh Pal conducted a research on prediction for performance Improvement of Engineering Students using classification []. Three different classification techniques (C4.5, ID3 and CART) are used. The outcome will be the number of students who are likely to pass, fail or promoted to next year. The dataset used for this survey is collected from the enrollment form filled up by the students at the time of admission from VBS Purvanchal University, Jaunpur. The most accuracy attained by the c4.5 algorithm (66.778%). The results provide steps to improve the performance of the students who were predicted to fail or promoted [].

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