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# Student Performance Analysis based on IQ and EI using ML

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**Abstract:** *Today's world is full of competitions, every student needs to strive for a better career in future. But it is important for students, parents and educational institutes to analyse student's performance. This analysis will help in providing excellent learning resources, environment and better experiences, improving their university ranks and reputations. The student performance analysis should be done at an early stage of the career so as to have an excellent and successful career. As per the New Educational Policy (NEP) 2020, the previous academic structure is transformed into the New Pedagogical and Curricular Structure. The new curricular was designed for the learners at different stages of their development such as 3 to 8, 8 to 11, 11 to 14, and 14 to 18 years. The last stage which focuses on students in the range of 14 to 18 years ( i.e. Class 9 to Class 12 students) are termed as Secondary Stage. The aim of the project is to prove the possibility of training and modelling a dataset extracted from a UI and to create a prediction model using Machine Learning algorithm. The dataset was fed to one of the Machine Learning algorithms to acquire an accurate model.*

**Keywords:** *EI (Emotional Intelligence), IQ(Intelligence Quotient), Machine Learning.*

## I. INTRODUCTION

Global competition in the Educational sector has made it challenging for institutes to understand student's IQ and EI. Knowing the IQ and EI of a student will have a pragmatic effect on an individual's learning methodology and help gaining success in an interested field of career. Even before employment, company analyses candidate on intelligence factor, job required competencies. It is observed that the young generation is facing problems while employment due to lack of relevant skills set. Hence this is an attempt to identify EI and IQ levels of students in the early stage of career, to make them future ready and enhance their abilities to strive better. Researchers have stated that 'emotional intelligence has a small to moderate association with academic performance, such that students with higher emotional intelligence tend to gain higher grades and achievement test scores'. EI has a great impact on long term success. Emotional Intelligence has basic attributes such as introvert And extrovert. Introverts and extroverts have their own pros and cons, which if identify and worked on will result in great success. EI has a big effect on a student's IQ. In IQ seven areas have been highlighted such as Agriculture, Science, Commerce, Arts, Fine Arts, Uniformal service. Thus the combined analysis of EI and IQ will lay a path for a student to choose a sound career.

## II. LITERATURE SURVEY

*A comparative analysis of emotional intelligence and intelligence quotient among Saudi business students' toward academic performance-*The paper States that understanding student's learning outcome and academic performance is not very easy. This information mentioned in paper is only limited for business students. Author[1] mentioned, the private students possess a significant IQ, and their academic performance is primarily driven by IQ and with high EI; whereas public sector students possess moderate EI with insignificant IQ levels and tend to perform average in their academics. All the measurement items of EI and IQ explained only 43.6% of variance in public student's performance and 56.3% in private student's performance. IQ is very narrow in nature and would not sustain in lifelong learning. Thus EI plays an important role in supporting IQ.

*Predicting Student Performance Using Data Mining* - The objective of the paper is to analyze the performance of a student by evaluating EQ and

IQ level and also to check the correlation between EQ IQ and performance [2]. The system focuses on undergraduate student's performance analysis by using Data Mining.

### III. EXISTING SYSTEM

The study highlights that the analysis of a student's EI and IQ is done at the time of employment or during an under graduation program. The existing system only evaluates the impact of EI on academic performance and is restricted to only a particular domain. Thus we need a system which focuses on students in the preparatory stage of their career when they have to go through the process of choosing an apt career for themselves. Before choosing, students need to be aware of their own IQ and EI levels. It will also help them to enhance their skill sets according to career choices.

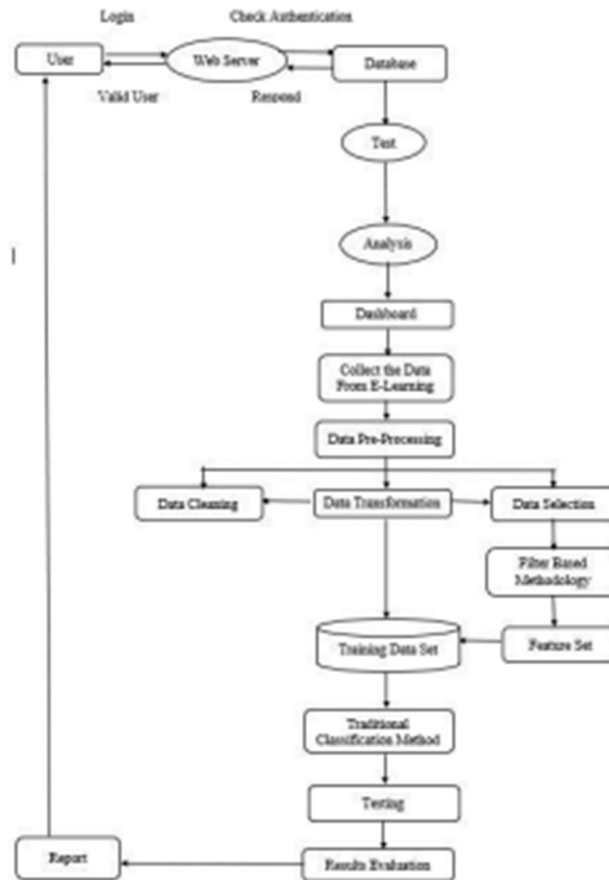
### IV. PROBLEM STATEMENT

The proposed system does a combined analysis of EI and IQ and generates report of a student that will help to identify and find the area of interest to have a successful career.

### V. PROPOSED SYSTEM

Proposed system aims at conducting analysis of students based on IQ and EI parameters. Combined analysis of IQ and EI will help students to make better career decisions. The system collects data of user from the UI. User data is fed as input to the ML trained linear regression model. The regression model for IQ and EI are trained using the dataset which finds the hidden patterns to make predictions. The report of output is generated systematically. The report of specifies about user's personal details, IQ analysis and EI analysis. Report can be downloaded to keep records.

### VI. ARCHITECTURE



### VII. MODULES AND WORKING

#### A. IQ Analysis

IQ analysis of a student will be based on Seven parameters. Response given to the questions by students will be judged on these seven parameters to derive their interest. The evaluation parameters are listed below in the table.



Sr. no.	Parameters
1	Agriculture
2	Arts
3	Commerce
4	Science
5	Technical(Computer)
6	FineArts
7	Uniformalservice

### B. EI Analysis

EQ will be judged through a psychometric test which will contain a set of interesting questions. The analysis will be based on two basic EI parameters. The parameters are listed in the table below.

Sr. no.	Parameters
1	Introvert
2	Extrovert

Introverted and extroverted students have their own pros and cons. These traits affect the organizational citizenship behavior, managerial contributions, leadership, social environment, etc.

Extroverts have a diverse range of interests; they are proactive in their work environment, enthusiastic, sociable and have a strong sense of self-expression. On contradictory introverts engage themselves into listening and analyzing before responding to a question. They have an intense thought process behind every point. To make ideas work, introverts implement writing as means of communication.

## VIII. ALGORITHM

Machine Learning is a growing technology which enables computers to learn from past experiences. Machine Learning algorithms are used to build mathematical models and to make predictions based on historical data. The purpose behind using ML is that it can handle complex and huge data to derive efficient solutions. As a human, it becomes tedious to handle huge data and work on it manually so we need a computer system which can make work easy and give efficient solutions. ML is classified into three categories. One of these categories is Supervised Machine Learning. In Supervised Machine Learning category, the system creates a model using labelled data to learn about the dataset, after carrying out training and processing the model is tested by using sample data to check whether the prediction is correct or not.

Linear Regression is Machine Learning algorithm. It falls under the category of Supervised Learning. The model predicts value based on independent variables. It basically finds the relation between dependent and independent variables. Linear Regression is a simple algorithm, easy to interpret and generate a predictive model. When a dataset is fed to a Linear Regression model, it helps in finding similar patterns and derives relationships between dependent and independent variables.

## IX. APPLICATION

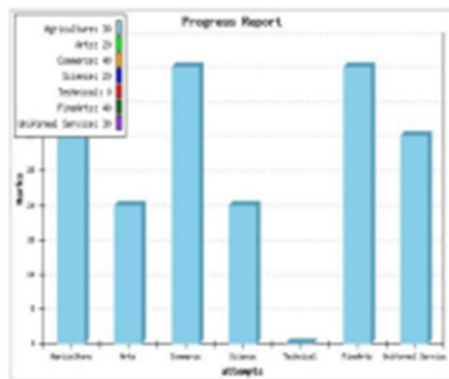
### A. Educational Sector

The model such as Student Performance Analysis is helpful in the educational sector to analyse students. As this model focuses on students of Class 9 to Class 12, which is Secondary Stage in schooling as per NEP. It will help students, parents

and institute to understand student's EI and IQ level and choose career accordingly. It also has an added benefit that students can work on skills in which they lack.

## X. RESULT

The result will be generated on parameters of IQ and EI.



## XI. CONCLUSION

The study and implementation was an attempt to understand the influential factors for a student's career. The importance of combined analysis of EI and IQ of a student provided an insight for enhancing their skill sets and to make better career choices. Thus students can start enhancing their skills and personality right from the preparatory phase of their career. As EI has a direct impact on academic reports. Whole preparation will directly impact their academic progress as well in a positive aspect. Thus the direct employability rate will increase due to appropriate and quality skill sets that students will possess and students can strive in global competition.

## REFERENCES

- [1] Sania Khan-A comparative analysis of emotional intelligence and intelligence quotient among Saudi business students' toward academic performance International Journal of Engineering Business Management.
- [2] R. Lakshmi, K. S. Narayanan, R. Swathikrishna, K. M. Sameera -Predicting Student Performance Using Data Mining Journal of Network and Information Security.



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