A State-level

# Azadi Ka Amrit Mahotsav Hackathon 2022

ORGANIZED BY EDUCATION DEPARTMENT (HIGHER & TECHNICAL)
GOVERNMENT OF GUJARAT



## Team Details

**Team ID :** TM000112 **Department/Office/Industry Name :** Education Department

**Problem ID :** PID048

**Problem Statement :** Student dropout analysis for school education

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## Synopsis View

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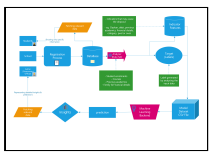
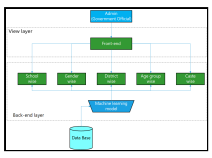
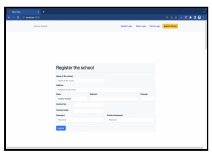
|---|---|
| Problem ID | : PID048 |
| Problem Statement | : Student dropout analysis for school education |
| Literature Review/Existing Innovation-technology to address related to your problem | : UNESCO's (2012) Global Report on education stated that there was an urgent need to address the high number of children leaving school before completing primary education. A recent survey by the National Statistical Office (NSO) has revealed that around 12.6% of students drop out of school in India, 19.8% discontinued education at the secondary level, and 17.5% drop out at the upper primary level. The Government's Right to Education Act and National Policy on Education may have been motivating to provide education to all but it is equally important to analyze the sustainability and efficiency of the education system. Dropout rates are considered to be a great waste of the education system, not only do many students leave school without acquiring basic skills, but their premature departure represents a significant waste of scarce education resources. |
| What would be your approach to solve the problem | : The significant approach to solving the existing problem of not having enough data analytics and insights data of student dropouts is as follows. The approach is to train the machine learning models and gather the data based upon the different details of students & features or main causes of student dropouts. Machine learning models are trained on the pre-existing data, and analyzed using different perspectives. Prediction models are created for each new data entry and tested upon data frames. Along with predictions, detailed insight analytics are generated using different data-analytics tools & technologies. |
| Road map/Flow diagram to develop final solution (1) |  |
| Road map/Flow diagram to develop final solution (2) |  |
| Tools and technologies to be used to solve the problem | : Python & Python machine learning libraries - Pandas, Sklearn, Matplotlib. Pandas library is used for reading the CSV files, and data pulled from the database. Numpy library is used for working with arrays efficiently in python. Sklearn library contains the machine learning models and Matplotlib is used for data visualization. Standard machine learning algorithms used - linear regression, polynomial regression, ensemble, and cross-sectional regression. The front-end/view layer is created using the react javascript, and a standard SQL database is utilized for storing and retrieving the data. |
| Challenges/Risk in implementingyour Final prototype | : Prior challenges in implementing the final prototype are as follows. High dependency upon the stakeholders (who enter the details of students) - This may cause wrong/falsified data insight generation if the entered details are wrong or falsified. Risk in the final implementation is any unauthorized (access to the database) or data breach done by an unauthorized identity or attacker. This risk can be minimized significantly by implementing the secured approach. |
| Possible outcome of your work | : Having detailed analysis and insight data on the student dropout system will help the education system a lot from many different perspectives. By analyzing the data according to different aspects - official bodies can improvise upon specific areas and increase literacy rates significantly. The different causes of student dropouts can be analyzed and published using an analytics/machine learning model. Afterward, the official bodies can provide possible solutions to resolve the causes of dropouts. |
| Work done till date | : The system implementation is currently in the development phase. In which building GUI for gathering data from schools and Building the machine learning models included. The architecture, sample data frames, and basic models are built. Also, the basic web-portal components are built (react.js is used to create the web application) - which includes forms, login/register pages, views, and a representation layer for the dashboard. |

**Image/Screenshot of Solution (1)**

**Image/Screenshot of Solution (2)**



**Report in PDF**