
STUDENTS MARKS PREDICTION
AND IMPROVEMENT

Team Members

Rohit Kushwaha
LEADER
B. Tech 4th Semester
300102220127
BK2553

Yaman ku. Sahu
MEMBER 2
B. Tech 4th Semester
30010220092
BK4269

Amitesh Patra
MEMBER 3
B. Tech 4th Semester
300102220014
BK4062

Contents


Overview

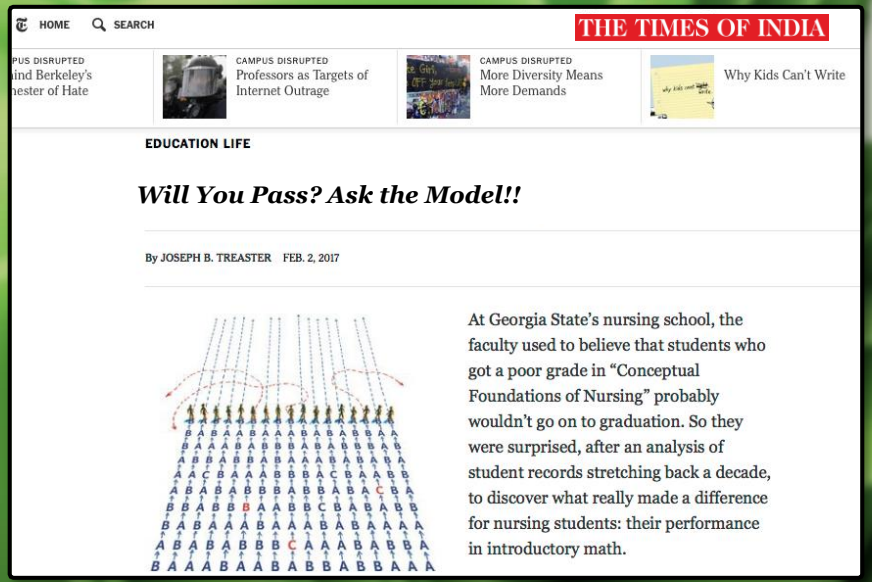

“What if we used the latest statistical methods on institutional data to support the decision processes around learning”


“Machine Learning”
“What if we used the latest statistical methods on institutional data to support the decision processes around learning”


“Machine Learning”
“What if we used the latest statistical methods on institutional data to support the decision processes around learning”
Great idea!

“Machine Learning”

“What if we used the latest ~~statistical~~ methods on institutional data to support the decision making processes around learning”



HOME SEARCH

THE TIMES OF INDIA

PUS DISRUPTED
ind Berkeley's
ester of Hate

CAMPUS DISRUPTED
Professors as Targets of Internet Outrage

CAMPUS DISRUPTED
More Diversity Means More Demands

Why Kids Can't Write

EDUCATION LIFE

Will You Pass? Ask the Model!!

By JOSEPH B. TREASTER FEB. 2, 2017

At Georgia State's nursing school, the faculty used to believe that students who got a poor grade in "Conceptual Foundations of Nursing" probably wouldn't go on to graduation. So they were surprised, after an analysis of student records stretching back a decade, to discover what really made a difference for nursing students: their performance in introductory math.

Research Objective

In this project, we have built a **project** that utilizes **Machine Learning** and **Data Analytics** utilities that is capable of **predicting** the result of student based on their previous performance in academics.

Few Questions to Ask

- How accurate should the results be?
- Are there any biases? Can we fix them?
- How do individuals use the information?

The Data

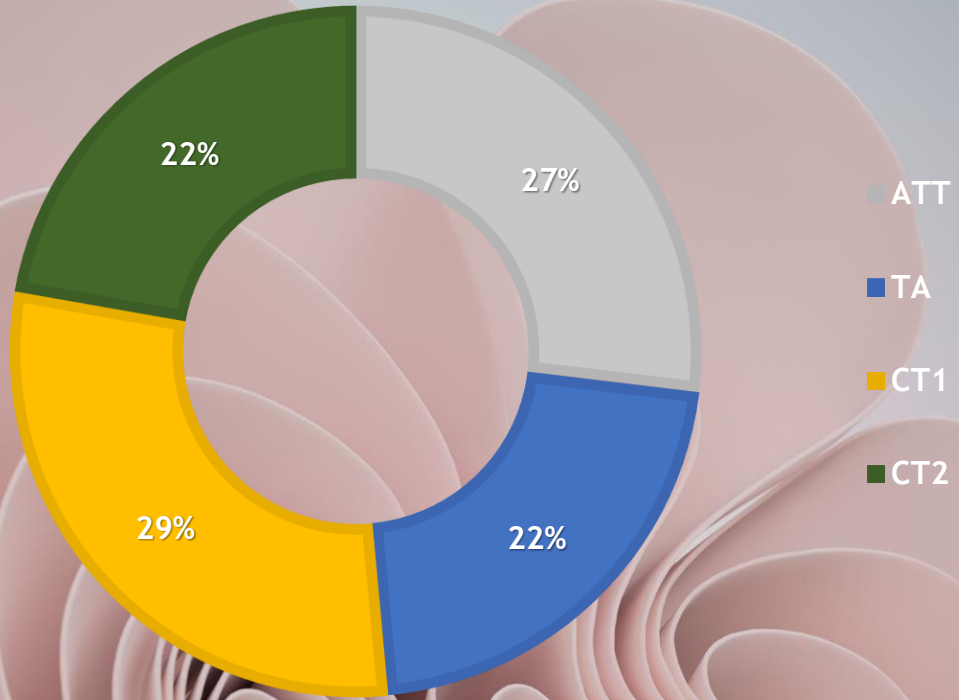
- Marks of around 100 Students of each Semester for a particular batch
- For every student:
  - Course name
  - student ID (URN)
  - CT1 marks
  - CT2 marks
  - TA marks
  - Attendance
  - ESE marks
  - Result (PASS / FAIL)

Engineered Features

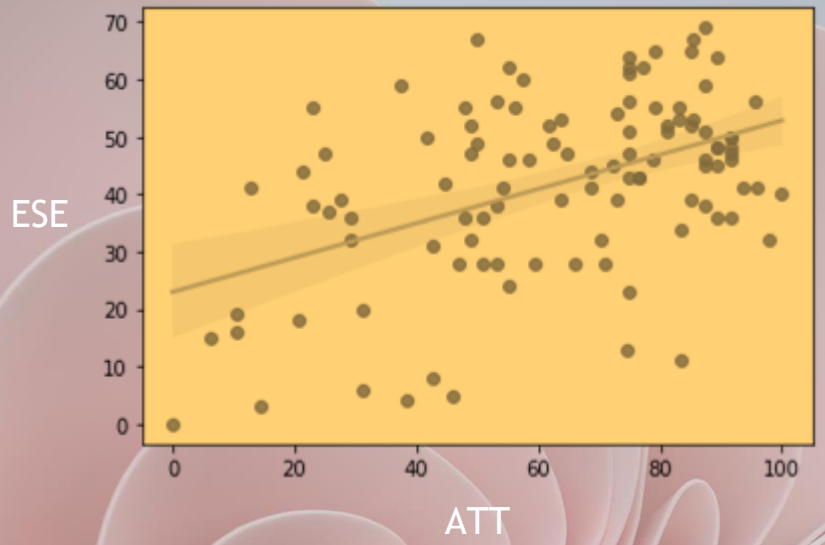
- Marks obtained in their previous semester as well as marks obtained in their current semester (eg: ct1, ct2)
- **Normalizing** the different features of the data for further calculations and prediction
- **Encoding** the features in categories to increase the model accuracy (eg: Categorizing the Result as Pass or Fail)
- **Over sampling** in order to compensate for the under representation of the data

The Pass Criteria

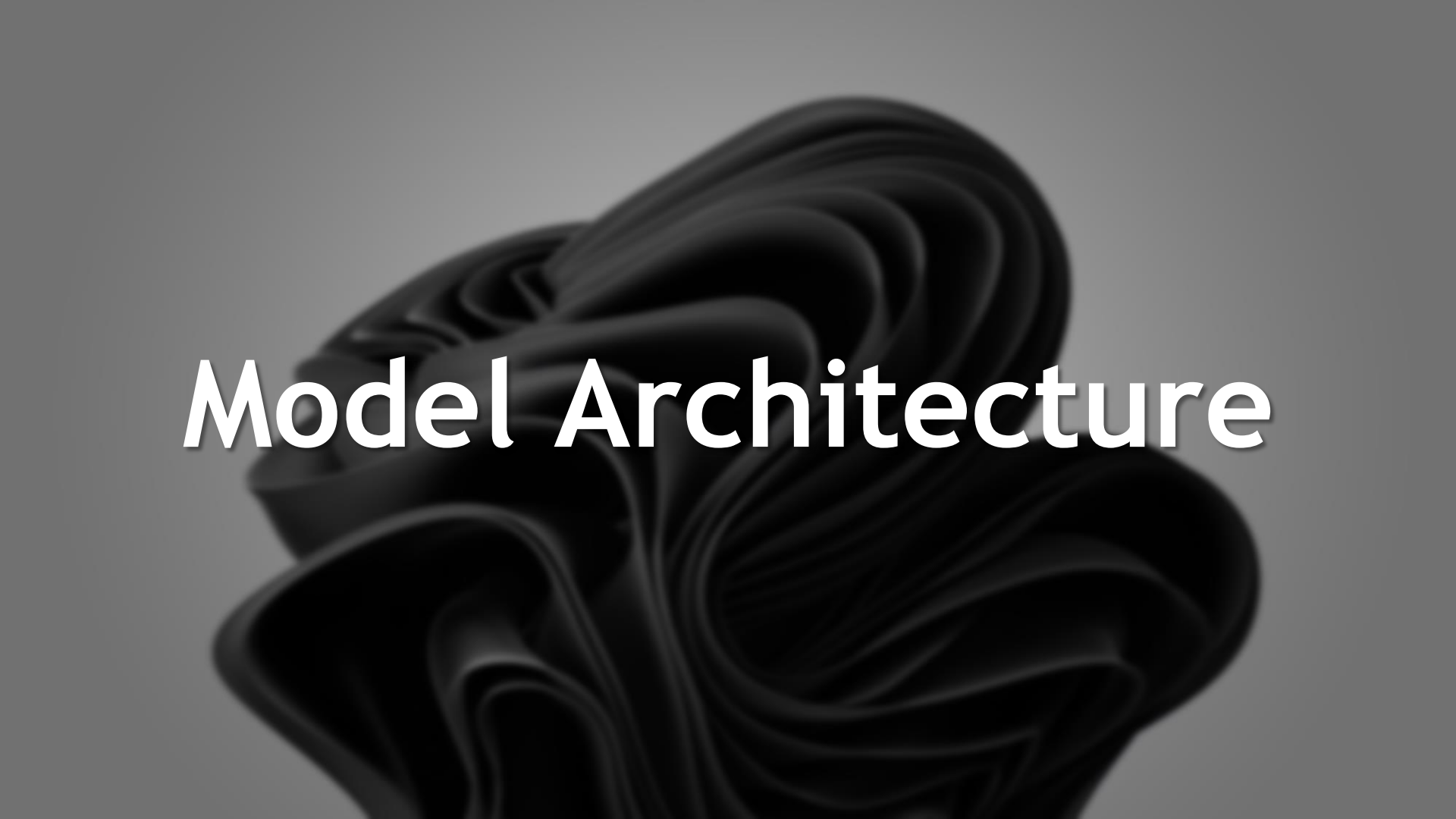
Feature Correlation



Graph of ESE vs Attendance



Comparing the distributions of Attendance and ESE we can conclude that the students who passed the ESE tended to have better attendance than those who couldn't pass the ESE. **This proves that one of our hypothesis, that the students who attends the most classes are likely to pass with flying colours.**


Model Architecture

The Forecast Model : Predict student outcomes before courses begin based on historical data and the students proposed schedule.

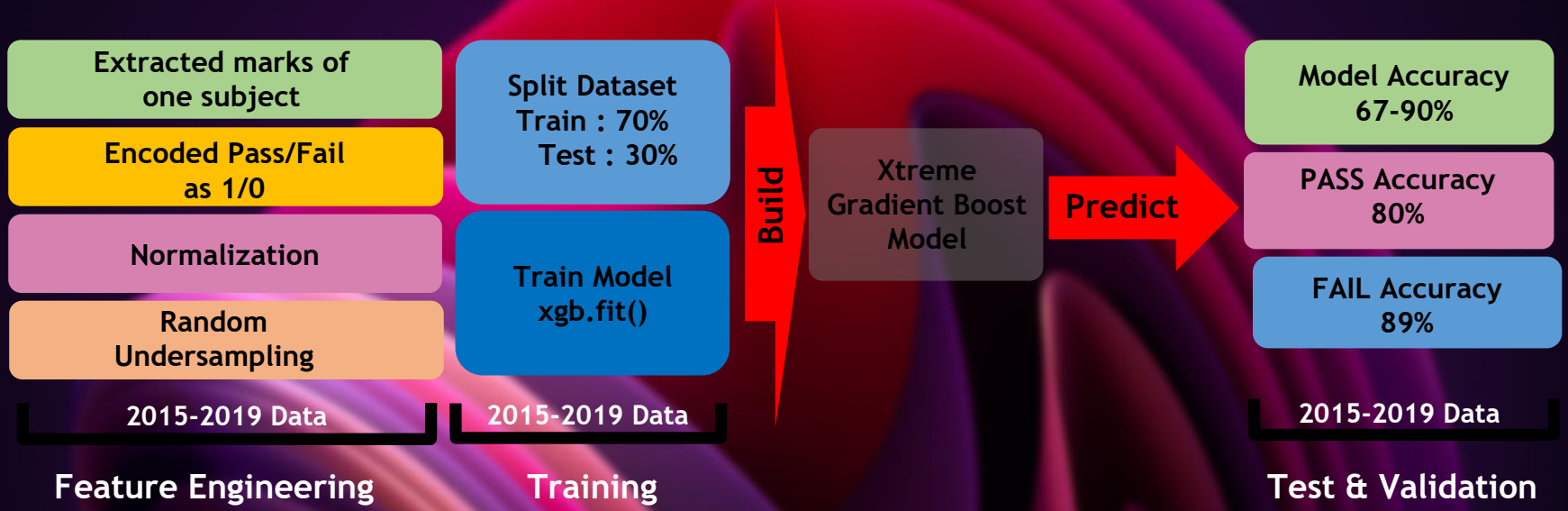
Potential Model Endpoint : Identifying the students who need extra support and taking the appropriate actions to enhance their performance.

The Forecast Model

- Be **scalable** and **accurate**
- Predict every students' **possible marks**
- Predicts the **result** (Pass/Fail)
- Consider
  - **history** of the individual student
  - their **attendance**
  - marks obtained in **ct1** and **ct2**
  - **TA** marks.

Model Workflow

Forecast Model Overview




Model Accuracy

Forecast Model Accuracy

This is our Model Accuracy

	precision	recall	f1-score	support
False	0.89	0.73	0.80	11
True	0.80	0.92	0.86	13
accuracy			0.83	24
macro avg	0.84	0.83	0.83	24
weighted avg	0.84	0.83	0.83	24


Conclusion

- On the basis of our analysis we can conclude that **Attendance has a direct impact** on the student result

- We have built upon a **XGB model** with over **90% Accuracy**