



STUDENTS MARKS PREDICTION AND IMPROVEMENT

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An abstract, three-dimensional green shape composed of many overlapping, curved, ribbon-like layers that swirl together, resembling a stylized flower or a complex, organic form. The color is a vibrant green with subtle gradients and shadows that give it depth. It is centered on a light gray background.

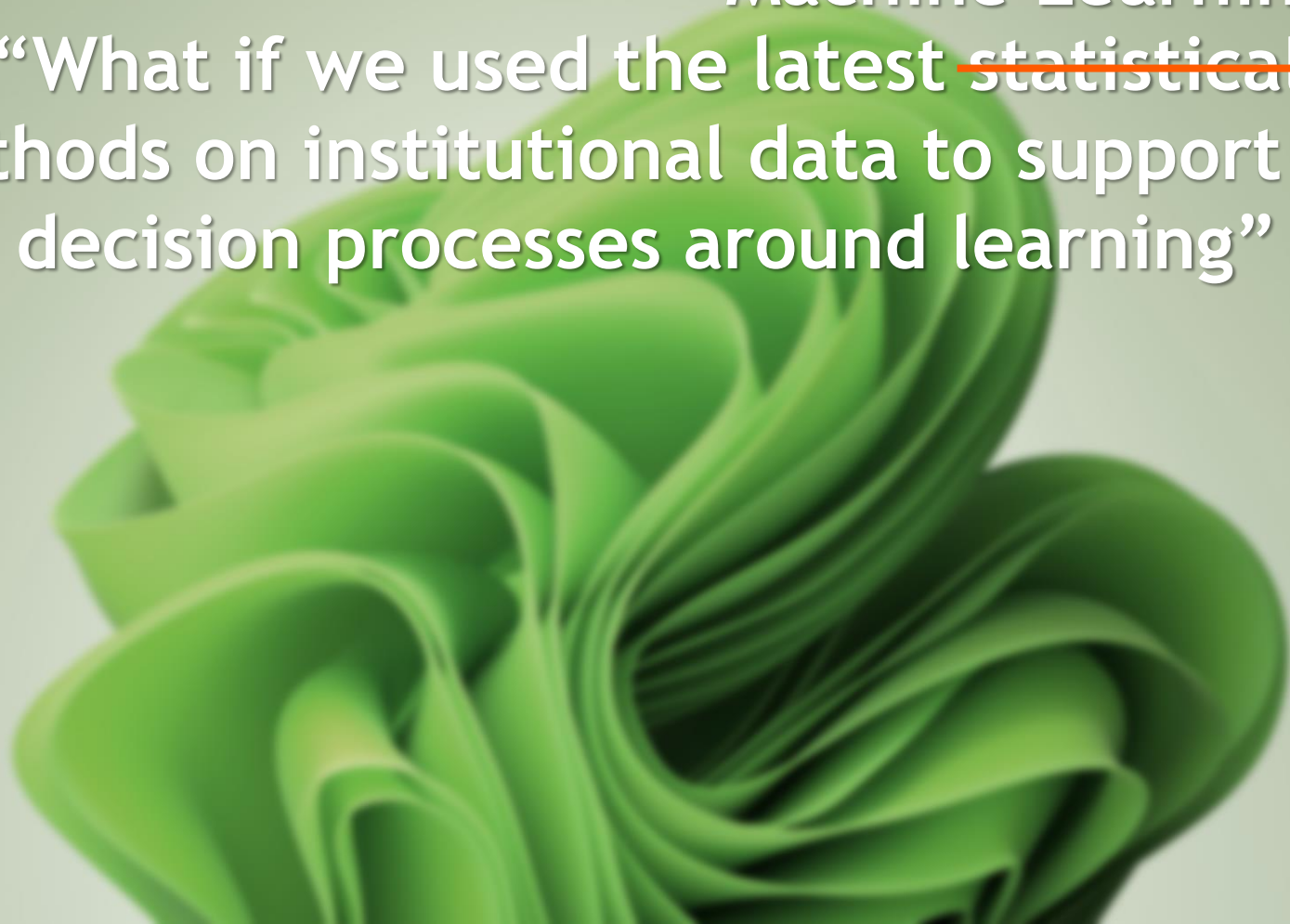
Overview

“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

CAMPUS DISRUPTED
Mind Berkeley's
Nester 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!!

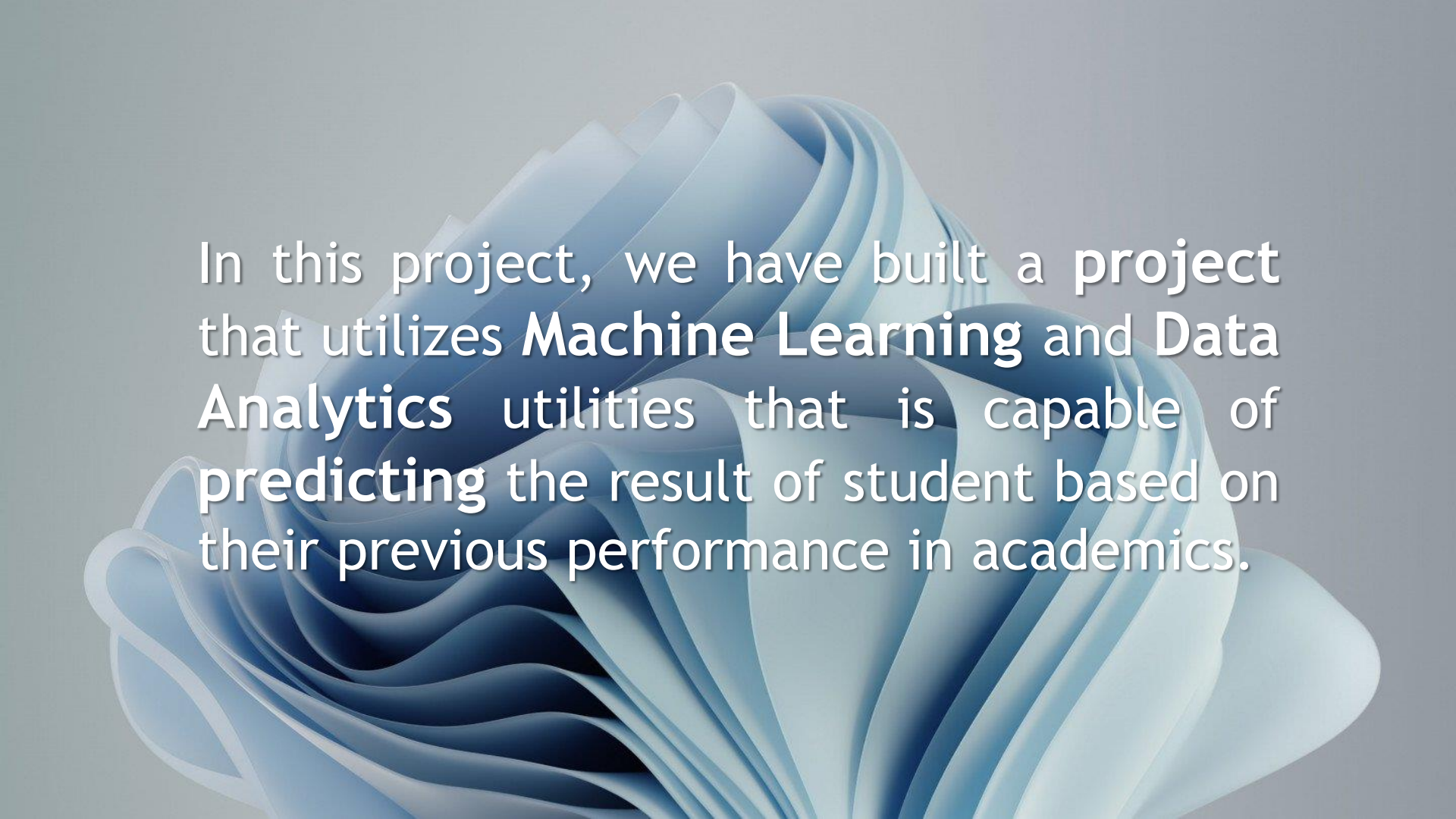
By JOSEPH B. TREASTER FEB. 2, 2017



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.

The background of the slide is an abstract, three-dimensional rendering of layered, wavy blue shapes. These shapes, in various shades of light blue and white, are stacked and curved to create a sense of depth and movement, resembling a stylized flower or a series of overlapping pages. The overall color palette is cool and professional.

Research Objective

The background of the slide is an abstract, three-dimensional graphic composed of numerous overlapping, wavy, blue-colored bands or ribbons. These bands are arranged in a circular, spiral-like pattern, creating a sense of depth and movement. The lighting is soft, with the bands appearing to have a slight sheen and casting subtle shadows on each other. The overall color palette is a range of blues, from light sky blue to a deeper, muted blue.

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?

A stylized, layered pink flower graphic, resembling a paper flower or a blooming flower, is centered on a light blue background. The petals are layered and curved, creating a sense of depth and movement. The text "The Data" is overlaid on the flower in a white, sans-serif font.

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)

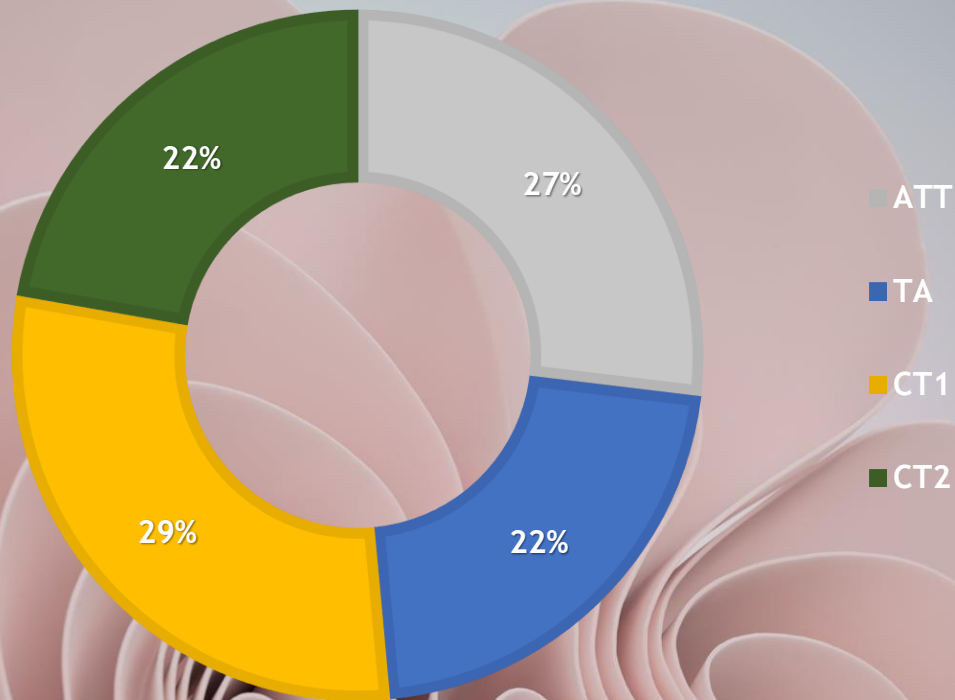
Engineered Features

- ❑ 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

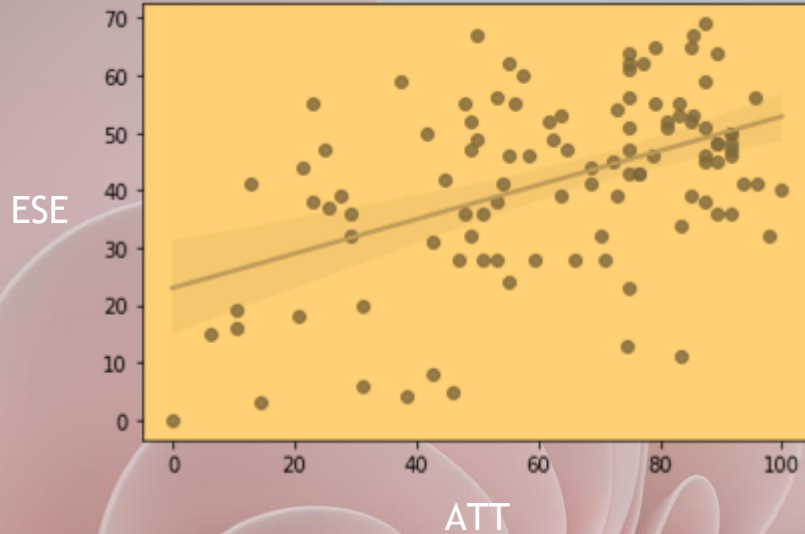
The Pass Criteria



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.

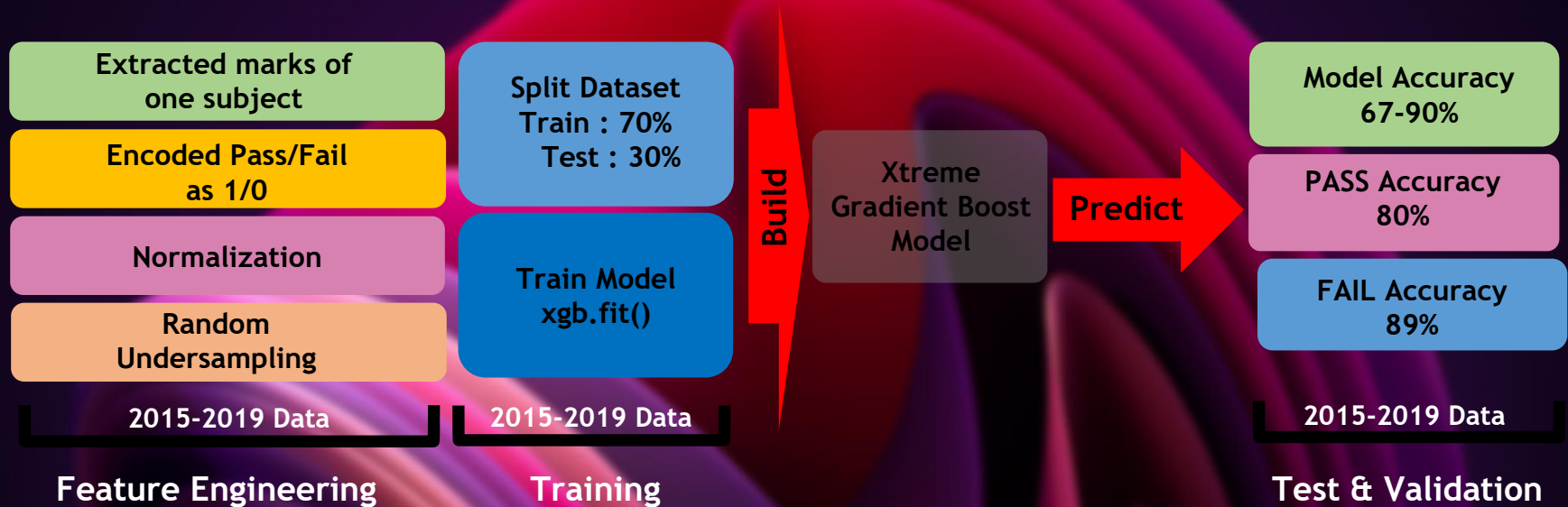
The Forecast Model

- ❑ 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

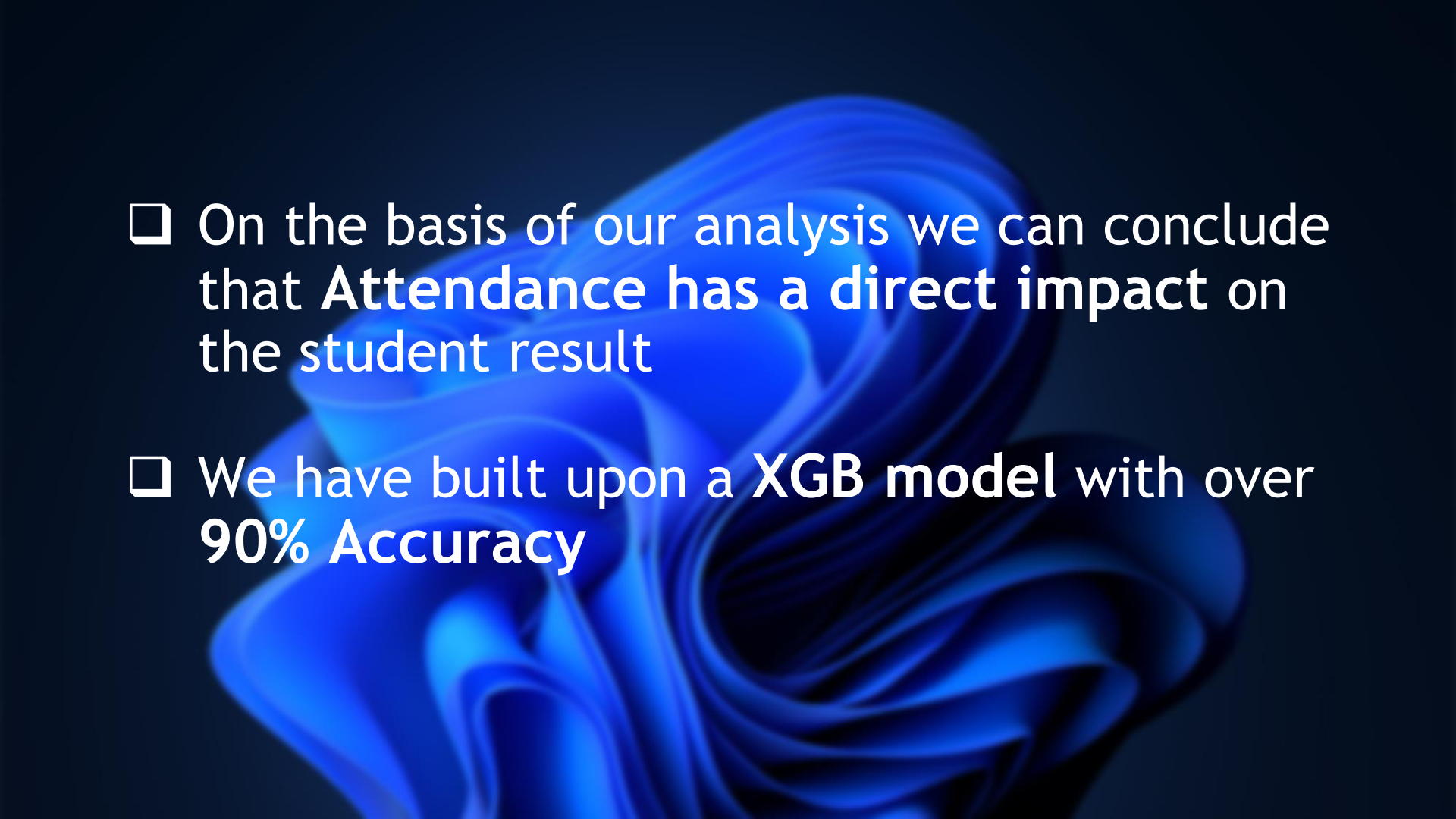
Forecast Model Accuracy

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

The background of the slide is a dark blue gradient with a large, intricate, swirling pattern in a lighter blue color. The pattern resembles a stylized rose or a complex, flowing ribbon that spirals outwards from the center, creating a sense of depth and movement. The word "Conclusion" is centered over this pattern.

Conclusion

- 
- The background of the slide is a dark blue gradient with a large, abstract, swirling pattern in a lighter blue color, resembling a stylized flower or a dynamic fluid motion.
- ❑ 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**