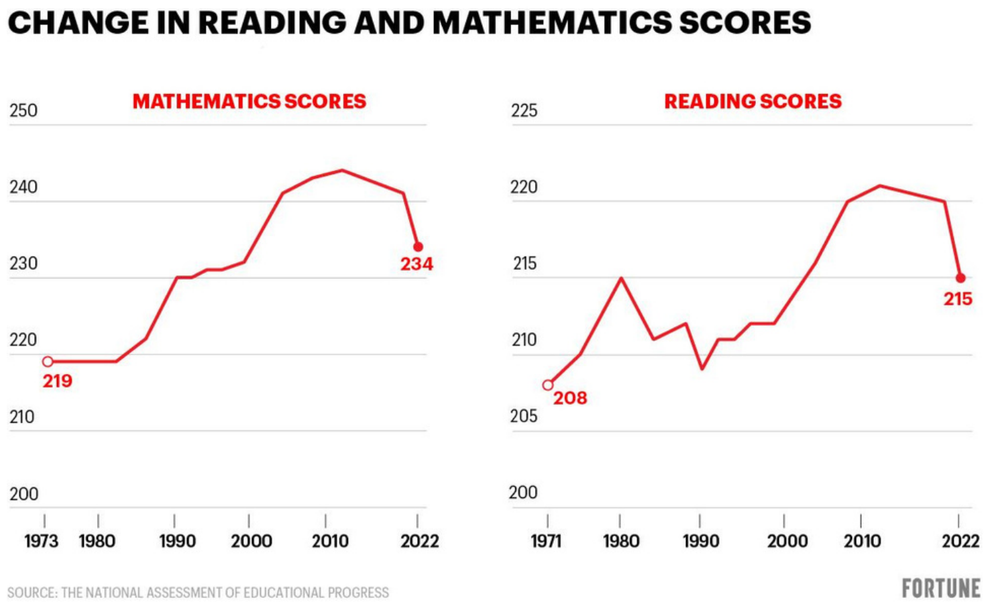
PHASE 3 FINAL PROJECT

STUDENT ADAPTIVITY TO ONLINE LEARNING

BUSINESS OBJECTIVE

THE DEPARTMENT OF EDUCATION IS CONCERNED WITH THE RATES OF STUDENTS WHO ARE NOT ADAPTING WELL TO ONLINE LEARNING. THEY WANT A WAY TO PREDICT AND PROACTIVELY PREVENT STUDENTS FROM STRUGGLING.



DATA

THE DATASET WAS FOUND ON KAGGLE AND CONTAINS 1205 ENTRIES, 14 FEATURES, AND AN ASSESSMENT OF ADAPTIVITY TO ONLINE LEARNING: LOW, MODERATE, OR HIGH

- Entries collected via online and offline surveys from students in Bangladesh
- Collected Between Dec 10th 2020 and Feb 5th 2021

TOP 3 MOST IMPORTANT FEATURES

4G NETWORK SPEED

FINANCIAL CONDITION RICH

ZERO HOURS OF DAILY INSTRUCTION TIME

Methods

1 **BUILD MODELS**

Using the dataset, multiple types of models were created

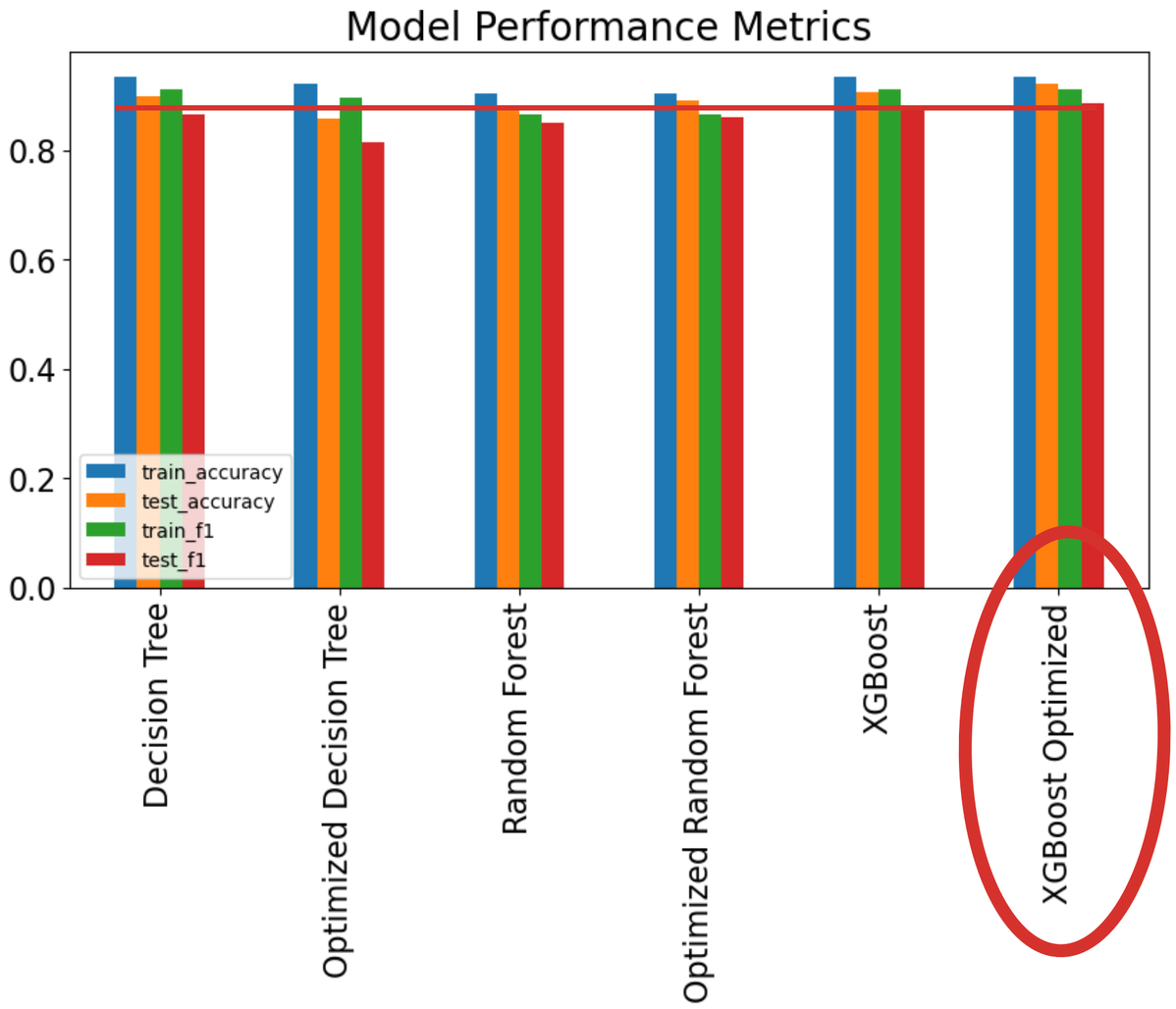
2 **ASSESS MODELS PERFORMANCE**

Since the model is a multi-classification problem, the F1 score which combines precision and recall will you be used

3 **FEATURE IMPORTANCE**

After a Final Model has been selected, using SHAP values feature importance will be determined

RESULTS



SIX MODELS WERE DEVELOPED AND THE ONE WITH HIGHEST AND MOST CONSISTENT F1 SCORE AND AUC FOR BOTH THE TEST AND TRAIN WAS CHOSEN AS THE FINAL MODEL

RESULTS

TOP 3 MOST IMPORTANT FEATURES

4G NETWORK SPEED

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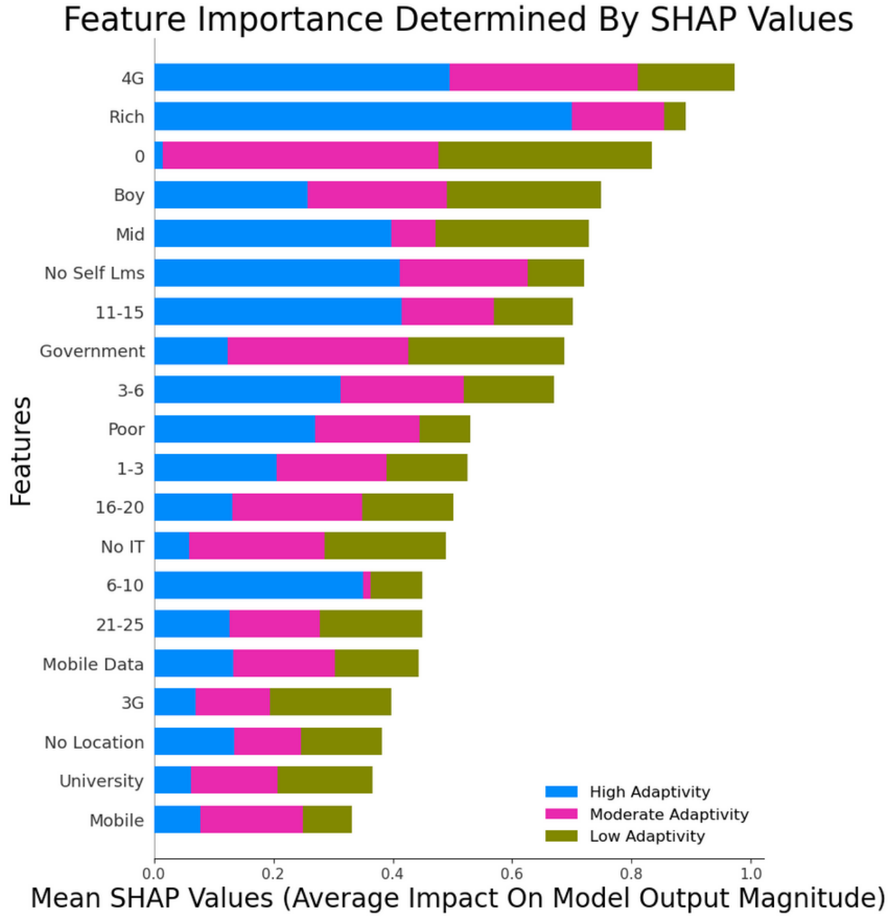

CONCLUSION

93% PROBABILITY OF ACCURATELY PREDICTING A STUDENT WITH **LOW ADAPTIVITY**

92% PROBABILITY OF ACCURATELY PREDICTING A STUDENT WITH **MODERATE ADAPTIVITY**

79% PROBABILITY OF ACCURATELY PREDICTING A STUDENT WITH **HIGH ADAPTIVITY**

THE AVERAGE **F1 SCORE** OF THE MODEL IS **.91**

TOP 3 MOST IMPORTANT FEATURES

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RECOMMENDATIONS

-THE DEVELOPED MODEL CAN BE USED WITH **CENSUS DATA** TO **IDENTIFY AT-RISK STUDENT COMMUNITIES** TO **MAXIMIZE** THE IMPACT OF THE DEPARTMENT OF EDUCATION **RESOURCES**

-STANDARDIZING **4G NETWORK** ACCESS TO ALL STUDENTS

-STANDARDIZING **DAILY INSTRUCTION TIME** TO **SUPPLEMENT ONLINE EDUCATION**

-**FURTHER RESEARCH** INTO HOW **STRONG FINANCES** POSITIVELY IMPACT **STUDENTS' ONLINE LEARNING ADAPTIVITY**

TOP 3 MOST IMPORTANT FEATURES

4G NETWORK SPEED

FINANCIAL CONDITION RICH

ZERO HOURS OF DAILY INSTRUCTION TIME

Next Steps

1. CONDUCT ADDITIONAL SURVEYS WITH STUDENTS WITHIN THE UNITED STATES EDUCATIONAL SYSTEM

2. -FURTHER RESEARCH INTO HOW STRONG FINANCES POSITIVELY IMPACT STUDENTS' ONLINE LEARNING ADAPTIVITY

3. ADDITIONAL EXPLORATION INTO DATASET AUGMENTATION TO INCREASE MODEL PERFORMANCE

ANY QUESTIONS?

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