



Predicting IB Subject Grade

Siti Alawiyah Mohmad Saleh

Capstone Project December 2021
General Assembly DSIF 2



01

General Overview

INTRODUCTION TO IB DIPLOMA PROGRAMME

- For students aged 16 to 19
- Similar to A Levels in SG government school
- programme aims to develop students who have excellent breadth and depth of knowledge



WHY TAKE IB DIPLOMA?

Students who study the IB Diploma cope well with transitioning to the university as they have developed investigative, research and critical thinking skills



Curriculum Overview



6 Subject Groups

Studies in language and literature
Language acquisition
Individuals and societies
Sciences
Mathematics
The arts



DP Core

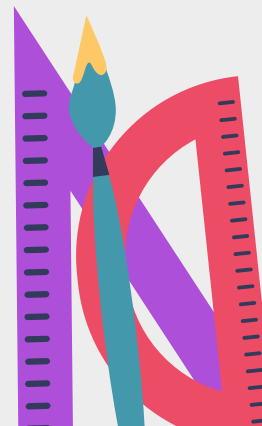
Theory of knowledge (TOK),
Creativity, activity, service (CAS)
Extended essay (EE).



Exams

Assessments

External assessment
Internal assessment



HOW ARE STUDENTS AWARDED WITH SUBJECT GRADE?

Higher Level

Standard Level

- IB awards same number of points for HL and SL subjects (Grade descriptors: ranging from Grade 1 to 7)
- HL and SL subjects differ in scope
- HL candidates are expected to demonstrate the various elements of the grade descriptors across a greater body of knowledge, understanding and skills
- In 1 of the grade descriptors, teachers will be asked for predicted grades
- Predicted grades are the professional judgement of the teacher





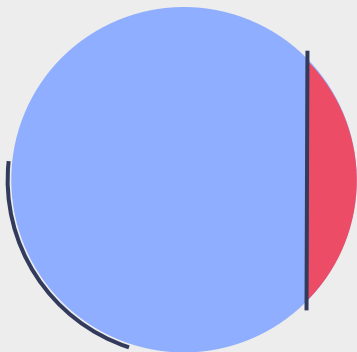
02

Problem Statement

PROBLEM VS. SOLUTION

Problem

As the predicted grades given to the students are from a teacher's professional point of view, the school wants to eliminate human biasness



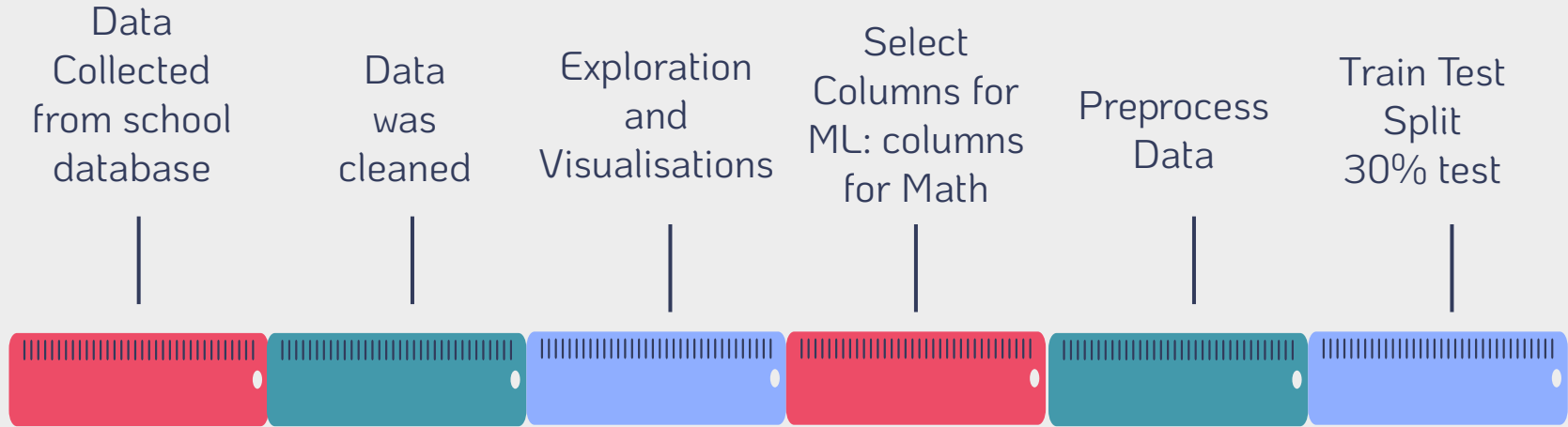
Solution

Create a ML model in predicting the student's IB subject grade and compare it to their actual final grade to see how well the ML model works.

Students can input in their grades gotten from their markbook rubrics to get their predicted grade.



PROCESS

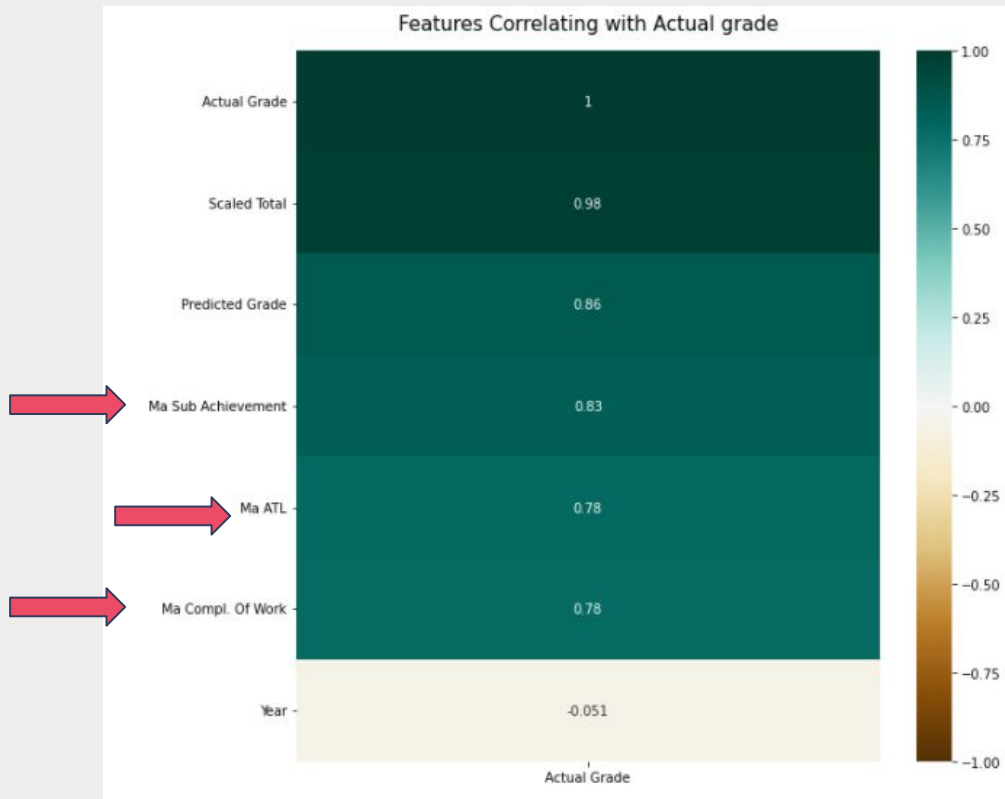




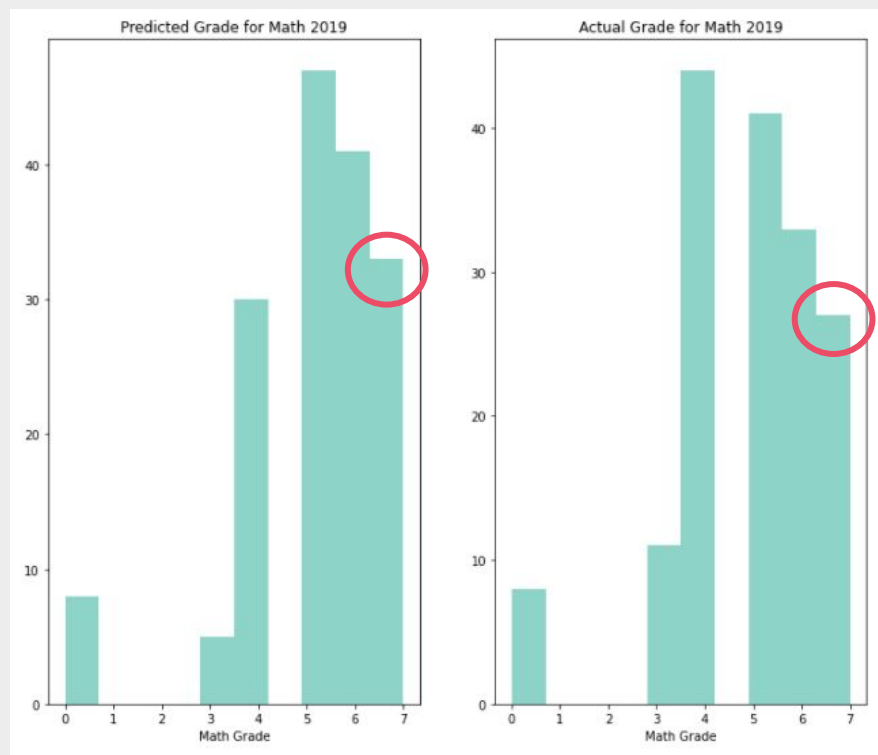
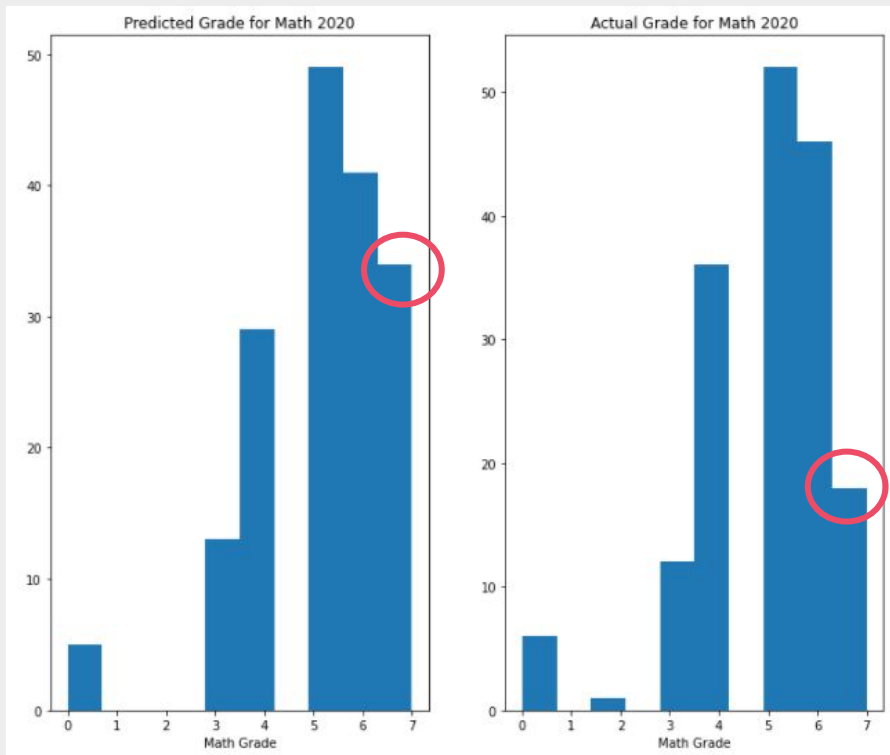
03

Data Exploration

Correlation Plot



Predicted Grade VS Actual Grade





04

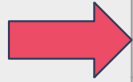
Modelling & Results

Results

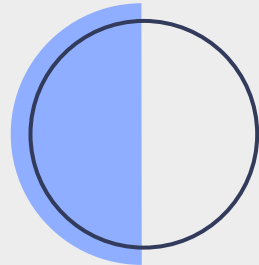
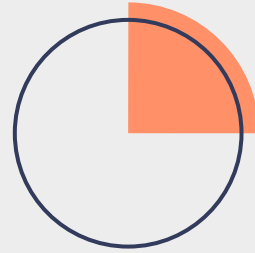
	Linear Reg.	Ridge Reg.	Lasso Reg.
Train Test	0.6771 0.6242	0.6741 0.6389	0.6752 0.6227
RMSE	0.7189	0.7203	0.7214
R ²	0.6242	0.6289	0.6226

Teacher's Prediction RMSE: 0.81012

Top 10 Model's Coefficient



Subject Achievement Grade	0.7241
Completion of Work Grade	0.1608
Teacher 1	0.0936
Attitude to learning Grade	0.0797
Teacher 2	0.0739
Teacher 3	0.0486
Teacher 4	0.0448
Standard Level	0.0373
Teacher 5	0.0363
Higher Level	0.0363



CONCLUSION & FUTURE WORKS

Conclusion:

- Best model: ridge regression
- Highest Coefficient: Subject Achievement Grade

Future Works:

- Deployment of model on the web
- Trying with other different model
- Test the model with 2021 data



THANK
YOU



Siti Alawiyah

Linked In:



Github:

