

STUDENT PROFILING BASED ON MOODLE LOG DATA

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INTRO + GOALS

The University of Tartu, offered a computer programming course in the Fall semester of 2020 using the Moodle platform. Over 1 million activity entries of about ~350 students were collected to gain insight into students' performance indicators using the Moodle logged data.

GOAL 1: identify common activity patterns of students as 'typical student profiles'

GOAL 2: predict students final grades in this course (based on their early activities)

GOAL 3: find struggling students based on their early activities

FUN FACT: ALL 1 MILLION+ ENTRIES WERE PROGRAMMATICALLY TRANSLATED FROM ESTONIAN TO ENGLISH!

RESULTS

Typical students profiles were created based on the grading scheme:

A, B, C, D, E, F.

Many patterns emerged from comparing these different profiles.

(Upper-Right: Figures 1 -6)

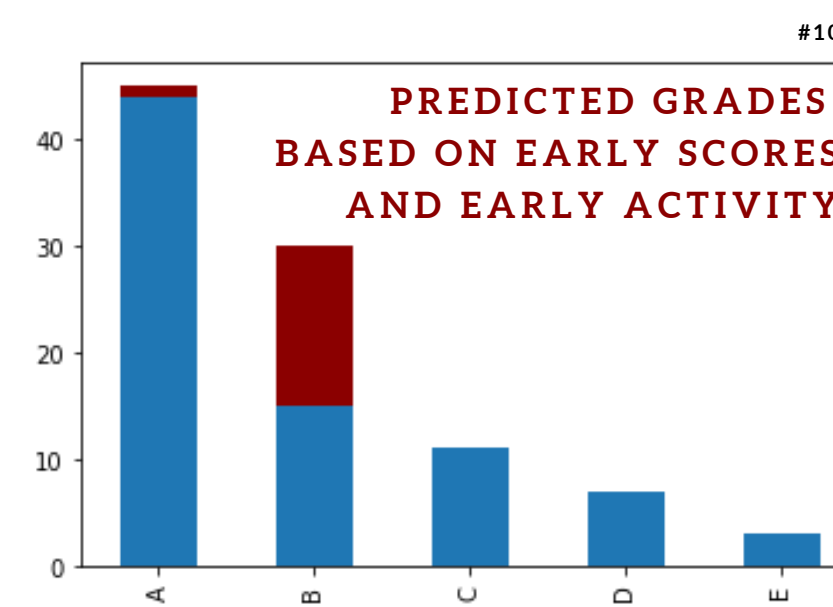
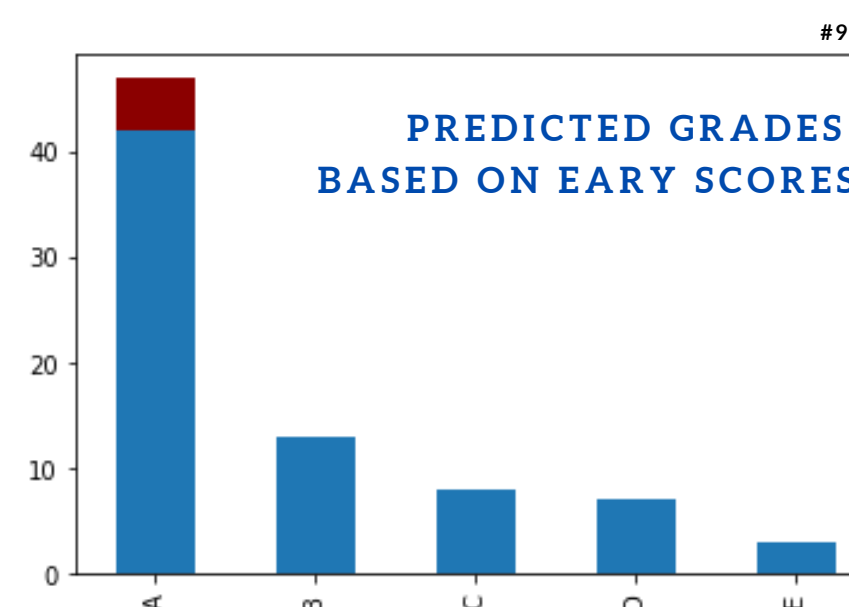
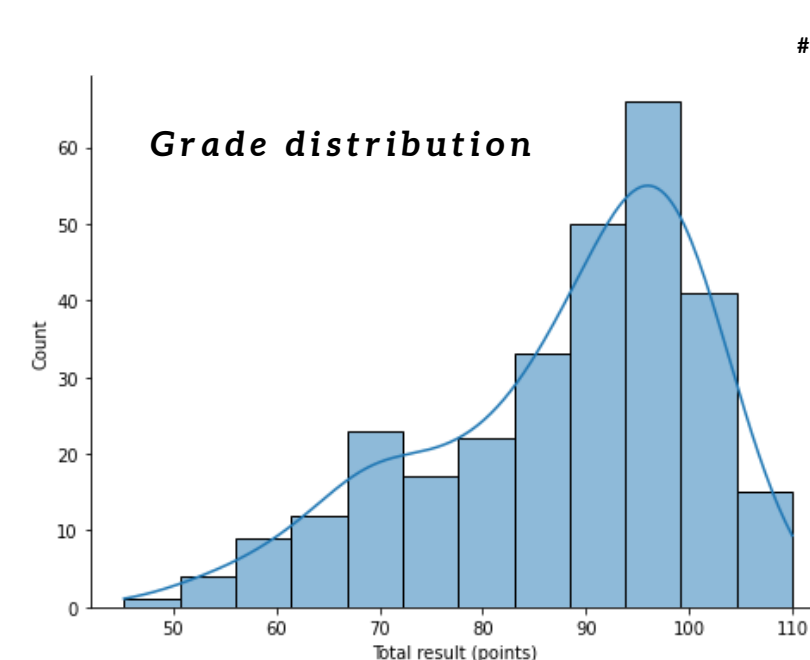
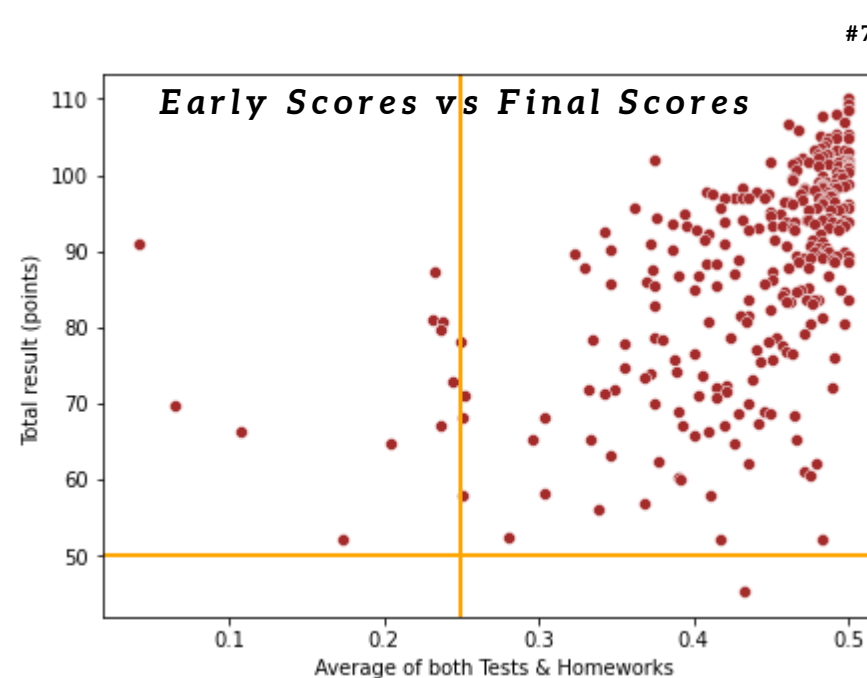
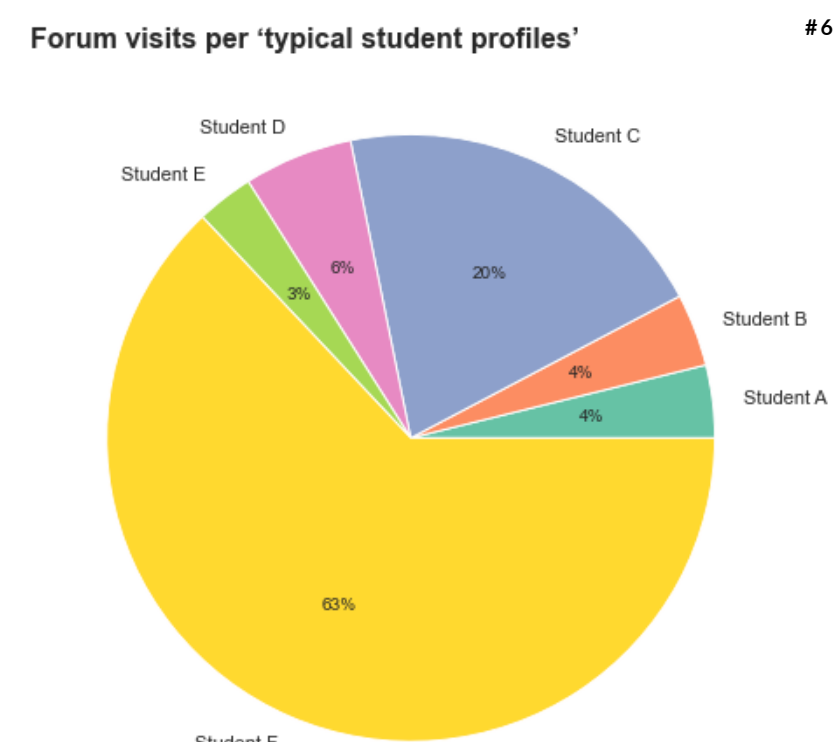
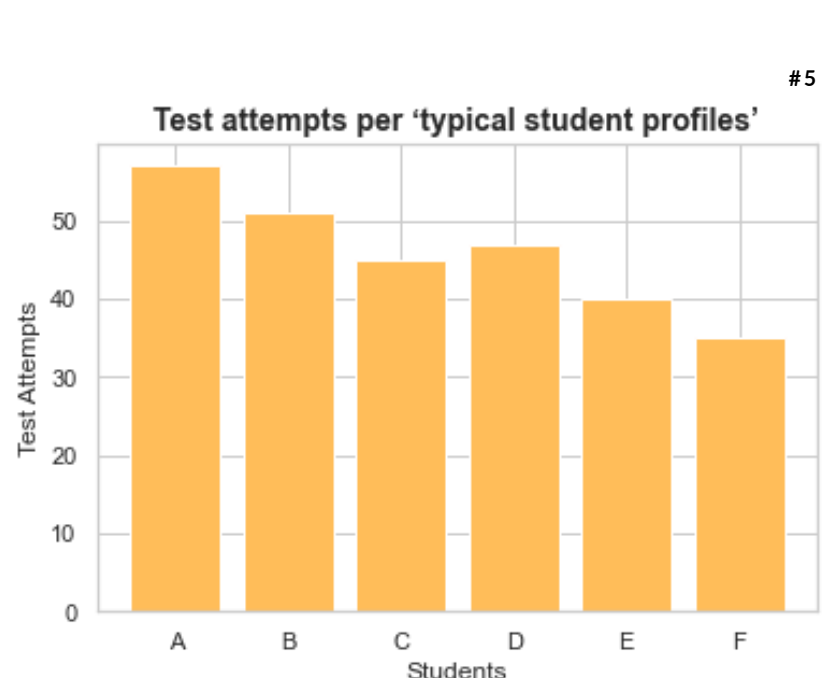
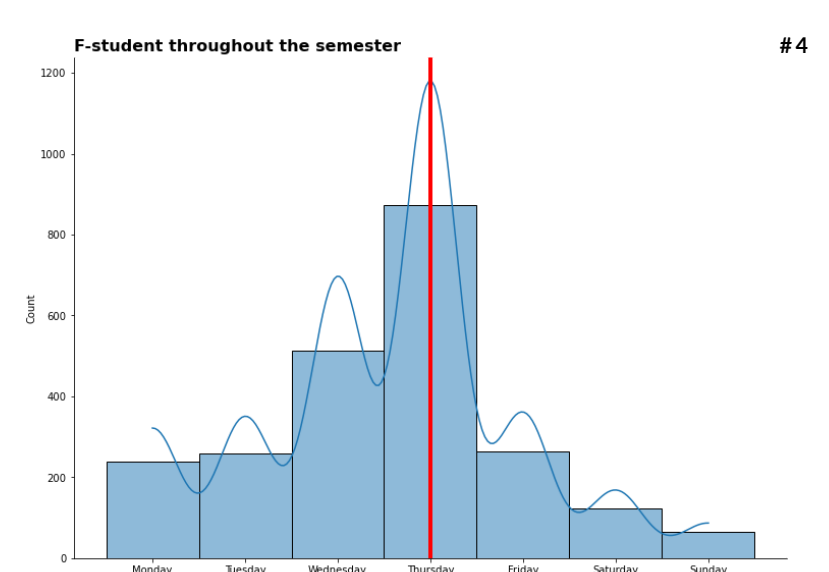
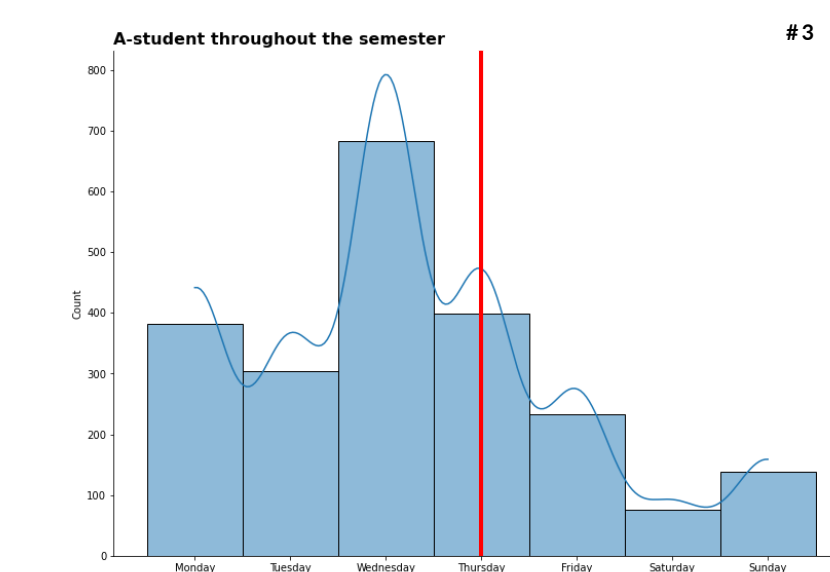
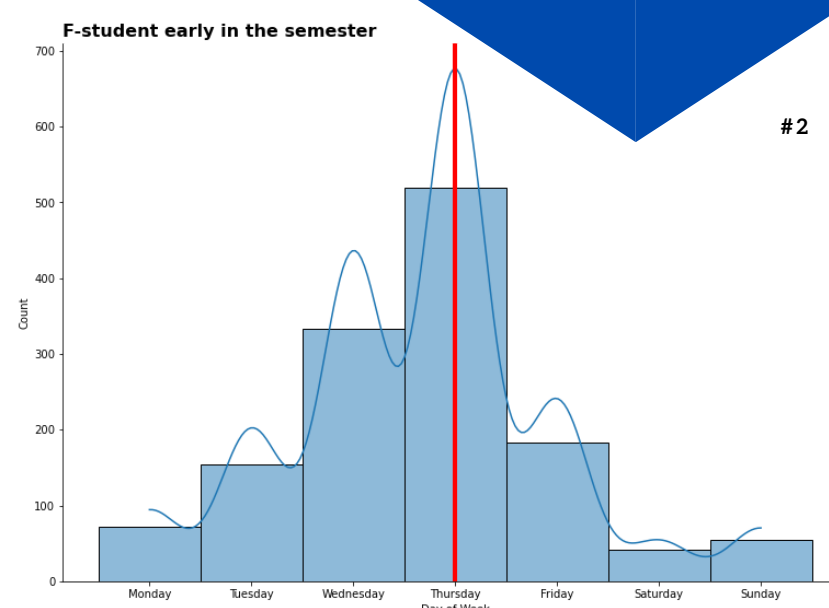
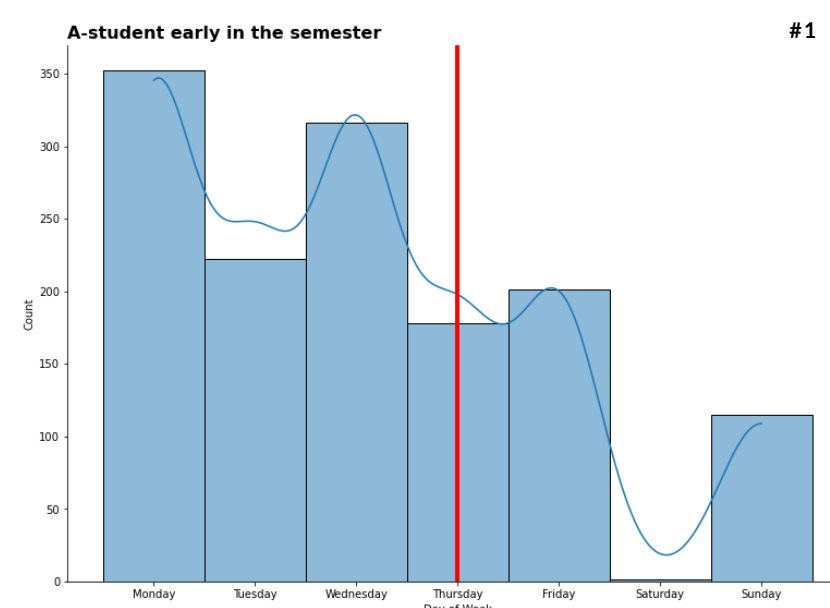
We trained a Random Forest Classifier model to predict students final grades based on their early activities from the first 7 weeks of Tests and Homework submissions and total Moodle activity.

We tried to identify struggling students based on these markers as the first few weeks it turns out were correlated with a higher final grade.

(Lower-Right: Figures 7 -10)

CONCLUSIONS

Both models predicted final grades with an accuracy of ~50% +/- 15%. This could be improved by selective filtering for types of activities. The profile of an A grade student consists of a consistent activity pattern of early submissions. F, E and D students work on assignments late and do not portrait consistent activity patterns.



BEHIND THE SCENES

<https://github.com/mbz4/IDS-PROJECT-2021-B01>