



Carnegie Mellon University
Master of Computational
Data Science



Carnegie Mellon University
Language Technologies Institute

Predicting Learning Outcomes

Sept 18 Standup

Mengjie Shen, Xiaoyu Zhang, Xinyu Gu, Yizhou Chen, Yuchen Wang

Advisor: Ken Koedinger

11-632 (Fall 2023)
MCDS Capstone Course

Subgroup 1 - Xinyu Gu, Mengjie Shen

This week:

Sync with the new team member on the last semester's progress

Next week:

Read [Dang's thesis](#) about **Gaming the System Alert**

Confirm with mentor about the detailed Fall Plan

Tentative Fall Timeline

Tasks	Due Date
Understand the context & read related papers	Sept 25
Dataset Selection and Preprocessing	Oct 2
Feature selection	Oct 9
Model training & selection	Oct 30
Model evaluation	Nov 20
Final paper & presentations	December

Subgroup 2 - Xiaoyu Zhang, Yizhou Chen, Yuchen Wang

This week:

- Literature review on domain-specific knowledge
 - [Cognitive Tutor: Applied research in mathematics education](#)
 - [A General Multi-method Approach to Data-Driven Redesign of Tutoring Systems](#)
- ...
- Inspect the datasets (Bernacki & Student Math Score)
- Perform exploratory data analysis
- Re-run last semester's analysis

Next week:

- Make some displays of the results of models we trained last semester and some ideas about whether some are producing better predictions than others. Why or why not?
- Literature review on correlation analysis
- Run experiments with existing codebase

Tentative Fall Timeline

Tasks	Due Date
Conduct a correlation study between the columns and the learning outcome	Oct 7
Formulate potential conclusions that can help improve students' learning	Oct 25
Quantify the learning gain, predicting learning gains	Nov 25
Final paper & presentations	December