



Master's Dissertation Defense

“Automated Grading Using Generative AI” by **Thomas Downes**

Date: April 12, 2024

Time: 3:00 – 5:00 p.m.

Place: Room 538, 130 N. Bellfield Ave, Pittsburgh, PA 15213

Committee:

- Jacob Biehl, Associate Professor, Department of Computer Science, Department of Information Culture and Data Stewardship, School of Computing and Information, University of Pittsburgh
- Dmitry Babichenko, Clinical Associate Professor, Department of Informatics and Networked Systems, School of Computing and Information, University of Pittsburgh
- Adam J. Lee, Executive Associate Dean & Professor, Department of Computer Science, School of Computing and Information, University of Pittsburgh

Abstract:

Recent innovations in AI have enabled a wide array of new applications to improve human lives and productivity. These innovations enable the automation of mundane, and repetitive tasks to an extent never before seen. By leveraging this technology, we have created a system which we believe can automate the time-consuming task of grading student homework submissions, while also maintaining a level of quality that students have come to expect. The system also provides a summary to instructors on common mistakes made by students and provides students with individualized written feedback intended to improve learning outcomes, all while reducing the grading workload for instructors.

In addition to developing the system, we used real student data to evaluate the results. This began with using the system to grade student submissions from previous semesters, and comparing the grades assigned by the TA and our system. We then moved on to testing the system on an active class. Students were provided with written feedback shortly after submitting their homework assignment, and asked to rate how useful they found the feedback. This feedback was chosen randomly from either the TA or the automatic grading system.