Code Large Language Models (CS 4/510)
Ref. No: 63883 and 63884
Spring 2024

Course Objective

- Large language models have many potential applications, not only to natural languages, but also to computer languages. This course will focus on application of large language models to computer code, for instance, in programming, compilation, static analysis, testing, verification, profiling, documentation, etc. The course will cover topics ranging from basics of large language models to advanced models specific for code and to integration of these models in every facet of software engineering processes. This study will be carried out by reading the most recent papers from relevant conferences and journals.

Class Homepage

- http://www.cs.pdx.edu/~xie/cllm-s24/cllm-s24.htm

Instructor

- Prof. Fei Xie
  Office: FAB 120-10 Phone: (503) 725-2403
  Homepage: http://www.cs.pdx.edu/~xie Email: xie@cs.pdx.edu

Office Hours

- By appointment

Prerequisites:

- None

Meeting Time and Location

- Friday 9AM-12:40PM, FAB 10 / Hybrid

Textbooks

- There is no textbook for this class and papers will be provided for each class meeting.

Grading

- Paper Presentation and Class Participation: 50%
  - Each student is assigned to a team responsible for presenting two papers on a specific topic in a given week and must participate in preparing and delivering the presentations.
  - Every student is required to attend each meeting and participate in paper discussions.
- Paper reviews: 50%
  - Every student is required to submit 2-page review for every paper being discussed each week, except the papers they are presenting. A review is required to include:
    - Summary of the paper
    - Strength and Weakness of the paper/approach
    - Open problems from the paper

Class Schedules

	Dates	Topics	Notes
Week 1	April 5	**LLM Basics**	Group 1
Week 2	April 12	**LLM for Code**	Group 2
Week 3	April 19	**LLM as Programming Assistant**	Group 3
Week 4	April 26	**LLM for Collaborative Coding**	Group 4
Week 5	May 3	**Augmented LLM with Tools**	Group 5
Week 6	May 10	(N/A)	(No Class)
Week 7	May 17	**LLM for Unit Testing**	Group 6
Week 8	May 24	**LLM for Bug Hunting**	Group 7
Week 9	May 31	**LLM for Debugging**	Group 8
Week 10	June 7	**Reasoning with LLM**	Group 9

(This schedule is subject to changes according to the need of the class. For the readings of each class meeting, please see the reading list.)

Academic Integrity

- Academic misconducts will be handled according to the rules of the Department of Computer Science, Maseeh College of Engineering and Computer Science, and Portland State University.