EECS 598 – Special Topics:
User Interfaces for Programming Languages

Instructor: Cyrus Omar (https://cyrus.hazel.org/)

Meeting Times: TBD

Overview

Programmers interact with programming languages by way of user interfaces of widely varying design. This course will provide a broad overview of the literature on user interfaces for programming languages, covering both notable historic and contemporary designs and ongoing research topics.

Topics covered may include: structure editors and block languages, tools for exploratory data analysis, visual programming, advanced autocomplete, live coding tools for musicians and artists, interactive debuggers, interactive theorem provers, educational user interfaces, end-user programming, cognitive dimensions of notation, mental models, API usability, and programmable physical environments.

Course Structure

Presentations: Course meetings will be structured around presentations by the instructor, students, and guest lecturers. Each student will present 1-2 topics during the semester (depending on class size).

Participation: Students will be expected to put in reasonable effort each week on background reading and/or other relevant activities (e.g. watching a demo video, or installing and playing) to support active participation in discussion.

Assignments: Students will be tasked with contributing to a collaboratively edited document that (1) surveys the UI-for-PL design space, (2) enumerates design criteria that guide these designs, and (3) summarizes methods for rigorously evaluating user interfaces against these criteria.

Final Project: Students (or pairs of students, depending on class size) will do a final project, which must consist either of (1) an implementation and lightweight evaluation of a user interface of the student's design, or (2) a substantial empirical evaluation of some existing user interface.

Audience: Graduate students in CSE or SI. Graduate students in other programs, and undergraduates, are also welcome with instructor permission. Students are expected to have some coding experience.