

CS 485/698: AI-Assisted Software Engineering

with Martin Kellogg

Course policies

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 - Let's try it now! **Suggested questions:**
 - Why would you do that?
 - Are you just bribing us to pay attention?
 - Does that actually work?
 - Do even silly questions count?

Who am I?

- NJIT assistant professor since 2022
- PhD at University of Washington (Seattle)
 - ~25% of time during PhD at AWS
- Research area: **static analysis**
 - “figure out what a program is going to do without running it”
- My office hours are Wednesdays, 1:30-2:30pm




Our TA

- Michael Chong, PhD student
- Research focus: privacy and security aspects of AI and mobile systems
 - Secure code generation
- Office hours: Mondays, 2:30 - 3:30pm



Motivation

- We want you to try out different AI tools to see what you like and what they are good for
- Teach you to be AI-enhanced software developer
- Job market for junior developers has been slow...
 - Could AI help you go from junior to senior?
- This is a new world: we are learning this **together**
 - My role is a little different than, e.g., in CS 490
 - “Learner-in-chief”

 Pinned



Thomas Dohmke   @ashtom · 22h



The evidence is clear: Either you embrace AI, or get out of this career.

Our latest field study with 22 developers who are integrating AI deeply into their workflows reveals a striking trend: those who persist beyond early skepticism emerge with dramatically higher ambition,

[Show more](#)

 93

 241

 1.3K

 193K



Thomas Dohmke   @ashtom · Jul 12



Coding isn't dead – it's reborn. So the way we teach is changing accordingly. Or, as [@UW](#) professor Magda Balazinska puts it: “We have never graduated coders. We have always graduated software engineers.” ✨

So, lean into vibe coding?

- Not quite: even the best of today's gen AI tools make *plenty* of mistakes
 - Not so different from junior developers of yore
- **Key insight:** the same software engineering techniques that we've been using for decades to help improve the quality of code written by junior developers can be used to help improve the quality of AI-generated code
 - This course is about how to do that

Course structure

- Learn how to use AI developer tools throughout the development process via:
 - Lectures
 - In-class programming activities
 - In-class presentations and discussions
 - Homework: Reflections
 - Homework: Readings
 - Group project

Course structure: two-week cycle

- Monday 1: Pair programming activity
- Wednesday 1: Team meeting, mini-lecture, mob programming activity
- Monday 2: Team meeting, mini-lecture, mob programming activity
- Homework: Reflection essay (due before Wednesday 2)
- Wednesday 2: Presentations and discussions

- Group project: Two-week sprint milestones

Grading

- 50%: Course Project
 - 6 milestones
 - Final presentation
- 18%: Reflection Essays
 - 6 essays (1 every two weeks); +1 for grad students only
- 32%: In-class Activities, Participation, and Professionalism
 - Team meeting participation
 - Presentations and discussions
 - Programming activities

Logistics

- Course website is the source of truth
 - <https://kelloggm.github.io/martinjellogg.com/teaching/cs485-sp26/>
- Canvas for homework submission
 - Note that there are separate Canvas instances for ugrad/grad

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- Canvas for homework submission
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- Discord for communication (QR code has invite link)
 - Introduce yourself before end of class in #introductions:
 - Year, degree program
 - Why are you interested in taking this class?
 - What AI tools have you been using and what have you used them for?



Activity: Vibe coding a new project

- Use your favorite AI-enabled IDE
 - If you don't have one, download Cursor
 - <https://cursor.com> (also <https://cursor.com/students!>)
- We are going to “vibe code” a project from scratch
- Work individually (feel free to talk or ask questions)
- **Rely on the AI as much as possible**
 - Don't write any code yourself... that is what the AI is for!
- Cursor can help you setup your dev environment too, if necessary

Project: Single-User Instagram

- Next.js web app
- Sqlite Database
- Deploy locally
- Required features:
 - Upload pictures
 - See a feed of uploaded pictures, sorted chronologically
 - App must have a logo you create (with AI!)
- Prize!!! Fastest to finish :)

How did it go?

Project: Multi-User Instagram

- Additional features:
 - User registration and login
 - Profile page with follow feature
 - Feed only shows users you're following
 - Landing page to show off app
- Prize!!! Fastest to finish :)

How did it go?

Next steps

- First reflection essay due one week from today
 - No AI use: we want *your* thoughts
 - Solo assignment, will present as a group later
 - Sign up for a topic **today** (link on Discord)
- Make sure you can access all course materials
 - Course website
 - Canvas
 - Discord