Welcome to 15-113!

15-113 – Monday 1/12

Who am I?

- Mike Taylor, Assistant Teaching Prof, CSD (mdtaylor@andrew.cmu.edu)
- Been teaching 15-112 since forever (Fall 2018)
- Came to CMU as a Robotics grad student in 2010, never left
- I have an axolotl named Kimchee
- I like collecting old stuff, making things with my hands, and reading about weird animals

The Student Dilemma of 2025 and Beyond

- AI is advancing extremely rapidly and is the focus of so much industry and research
- Employers demand AI expertise, but you can't responsibly create production-ready code with AI alone. You still have to master fundamental concepts and problem-solving skills
- Improperly using AI in your fundamental courses will *obliterate* your ability to learn, so where does AI fit into your education?

The Student Dilemma of 2025 and Beyond

- Plus, the job market sure feels like an absolute wasteland…
- To stand out, you need:
  - Fundamental knowledge and well-honed problem-solving skills
  - Experience with incorporating AI into your workflow efficiently and responsibly
  - Interesting projects and experiences

15-113 is meant to be…

- …a playground for exploring AI in a low-risk setting
- …a collective effort to discover best practices for AI use
- …an opportunity to build open-ended projects that set you apart
- …a place to share experiences from your peers, other faculty, and recent graduates in industry
- …a way to directly prepare you for your future career opportunities

What you can expect to gain

By the end of the course, you should have:

- The ability to effectively combine your problem-solving and programming skills with current-generation AI tools
- Strategies for rapidly evaluating new tools and tech developments as they emerge
- A well-informed understanding of the impacts of modern generative AI, and a personal model for what responsible use means to you
- A web-based portfolio of work that you can add to throughout your career

Meet our TAs!

Taha
(tshakeel)

Nazanin
(nghazi)

Michelle
(mzj)

Alex
(alexche3)

A giant caution for your other classes!

- You MUST learn the fundamentals. You MUST learn to effectively problem-solve without AI. Industry leaders from Microsoft, Google, and beyond are *begging* you.

- I've watched AI overuse ruin hundreds of students in 15-112, and 15-122 has gathered reliable data that correlates each improper use of AI on assignments with lower exam grades

- Follow every course's AI policy, please, for your own good. These policies are never meant to be arbitrary.

Back to 113: This is a new course!

- Almost all plans are subject to change
- We’re very open to feedback! Tell us what you want to learn and we’ll do our best to make it happen
- Like what you see? Peer pressure invite your friends to join in! We have some space left, and they only need 15-112-level experience.

Breakout: Talk with your neighbors

- First them their name and why they're taking the course. Fill this out to let us know! https://bit.ly/3LaEae1

Take a moment to really stare this down

Course Website: https://www.cs.cmu.edu/~113/

Take note of:

- Ed and Office Hours
- Grade distribution
- Schedule
- Academic Integrity

Be aware of HW1 and Project1!

(These will be linked in the schedule shortly after lecture)

Discussion

Break up into small (4-6 person) groups and discuss the following questions. Be ready to report back!

1. What is “vibe coding?” If someone says they vibe coded something, how do you interpret that, and how do you feel about what they made?

2. Without additional context, “AI” is a *very* broad term. We should try to find a definition for what it means in the context of this class. What should it include or not include?

Let’s make a website

15-113 – Wednesday 1/14

Picking up where we left off: Zelda

- On Monday I started to show you what a naive attempt at vibe coding (with an overly general prompt) looks like, so let's travel that path just a little further, for no more than 10 minutes

- Recall that The first output of "Make zelda with cmu_graphics" in ChatGPT didn't run at all.

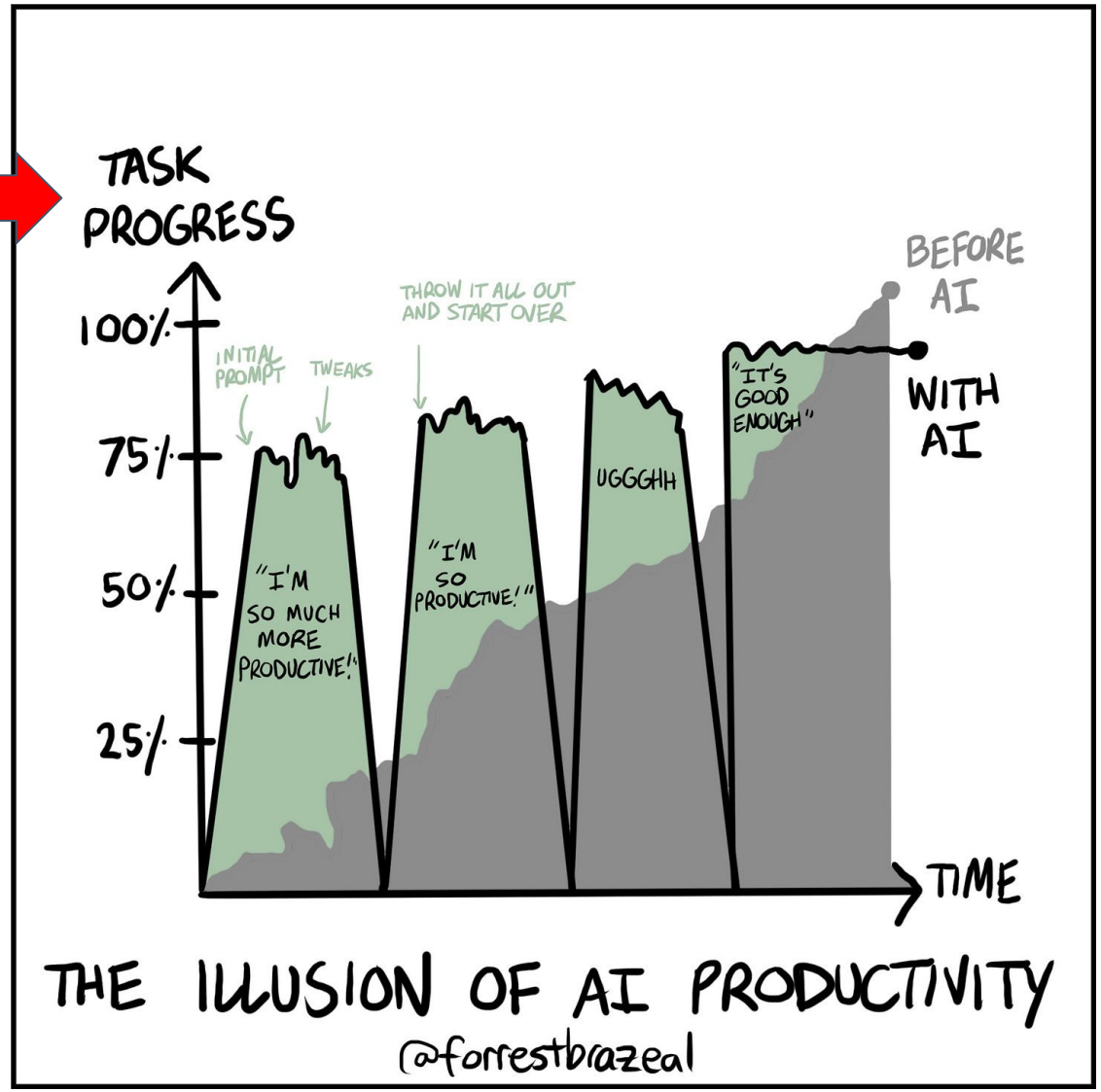
- ChatGPT recognized that we were missing runApp() when we pointed it out, but buried it in lots of text. Let's ask it to be more concise.

Thoughts on the Zelda experiment

- We *did* put ChatGPT at a disadvantage by requiring a less-commonly-used module (cmu_graphics), but constraints are common IRL
- It's common to eventually hit a ceiling where pure english-language prompting yields no more improvement
- Pushing all the way to that ceiling usually leaves you with difficult-to-understand code

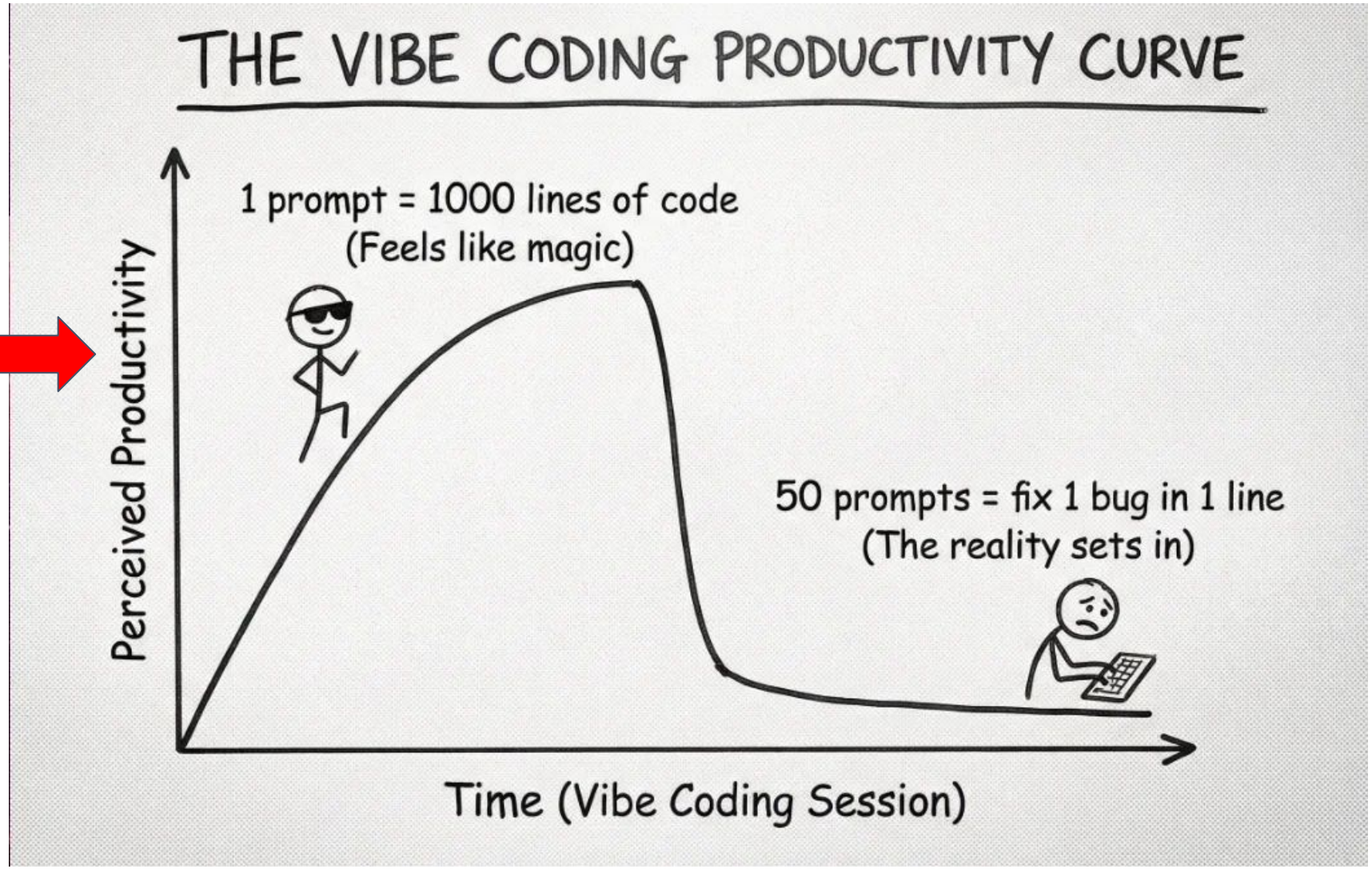
Image search for “AI time vs output plot”

Note that some of these plot progress, others plot productivity (i.e. rate of progress)



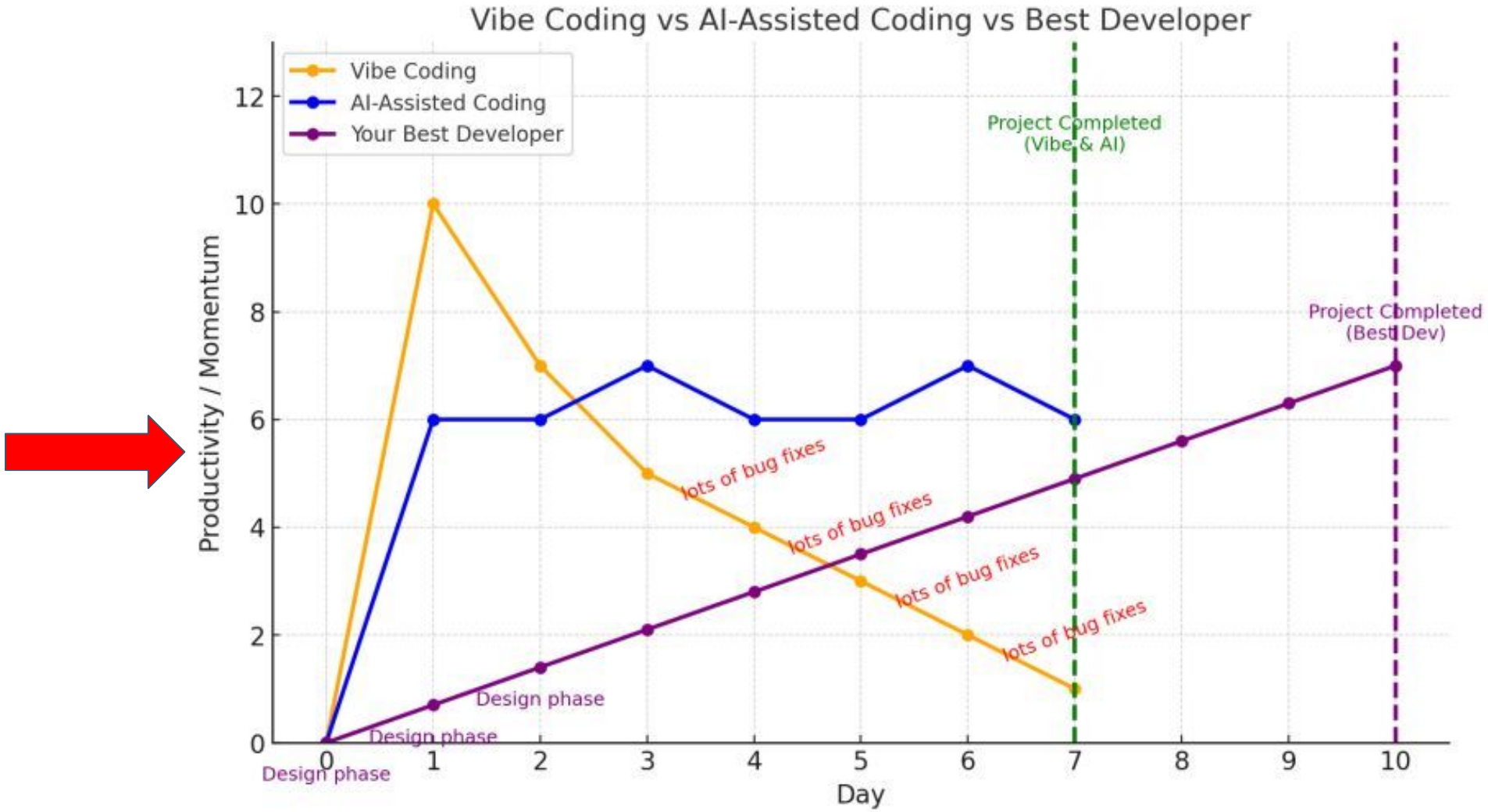
https://www.reddit.com/r/vibecoding/comments/1pc948b/does_anyone_actually_build_useful_apps_with_vibe/

A more pessimistic view



https://www.reddit.com/r/vibecoding/comments/1pc948b/does_anyone_actually_build_useful_apps_with_vibe/

This one suggests a third option



https://www.linkedin.com/posts/sunil-mallya-91a88320_claudecode-cursor-vibecoding-activity-7366516358521475072-_xPq

Breakout: Talk with your neighbors

- Talk with each other about what you think the graph should look like. You can use the blackboard if you want. Then fill this out! https://bit.ly/4pzt1kL

On to websites

- (We *will* come back to Zelda and Python, but later)

- Websites are “easier” to make work because usually they don’t break in their entirety

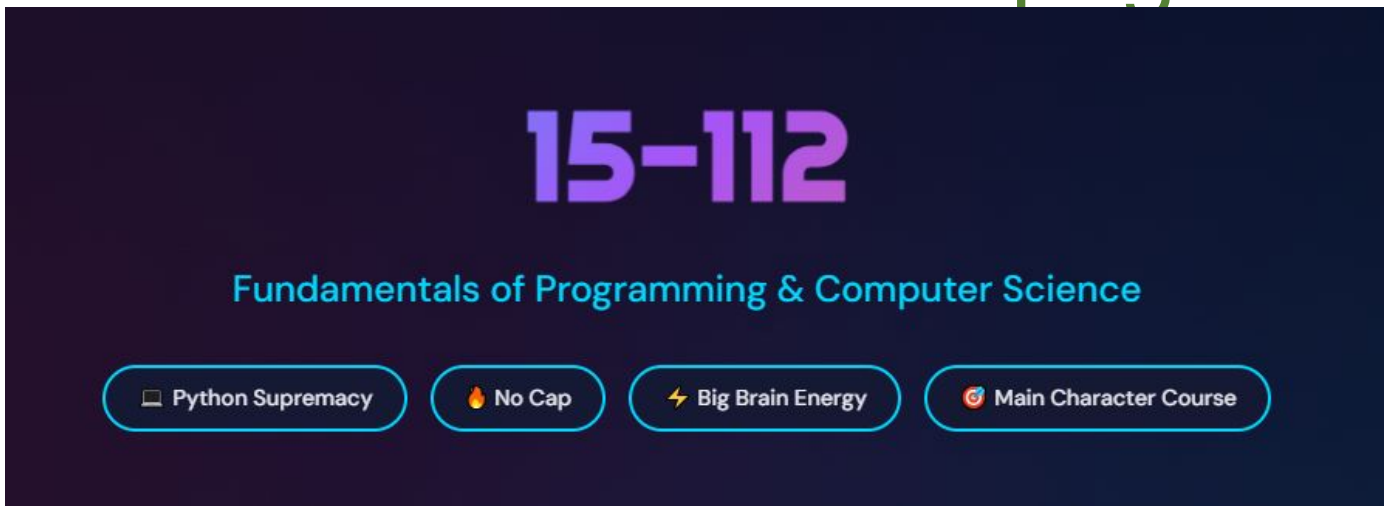
- Three components you’ll commonly find:
  - **HTML:** The **contents and structure** of a webpage
  - **CSS:** The **visual style** of webpage elements
  - **Javascript:** The **behavior** of the webpage (i.e. animated elements, dynamic features etc.)

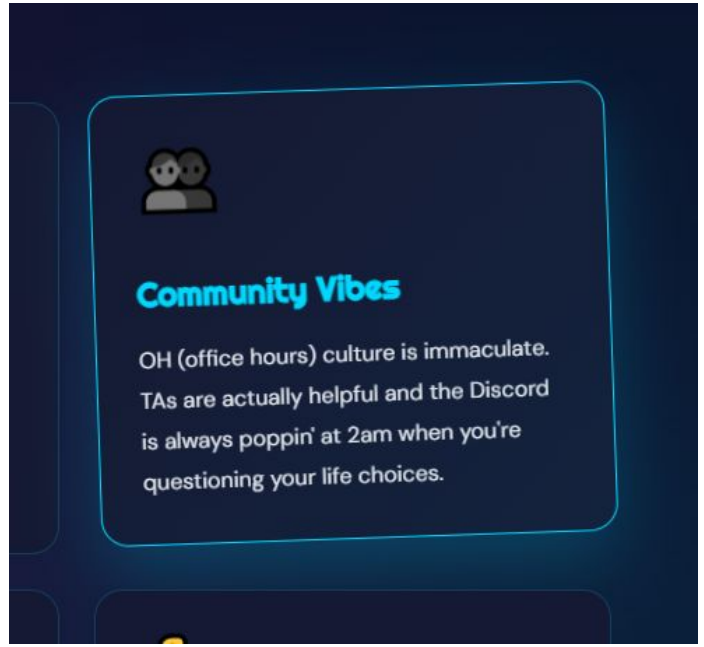
What's our suggested approach?

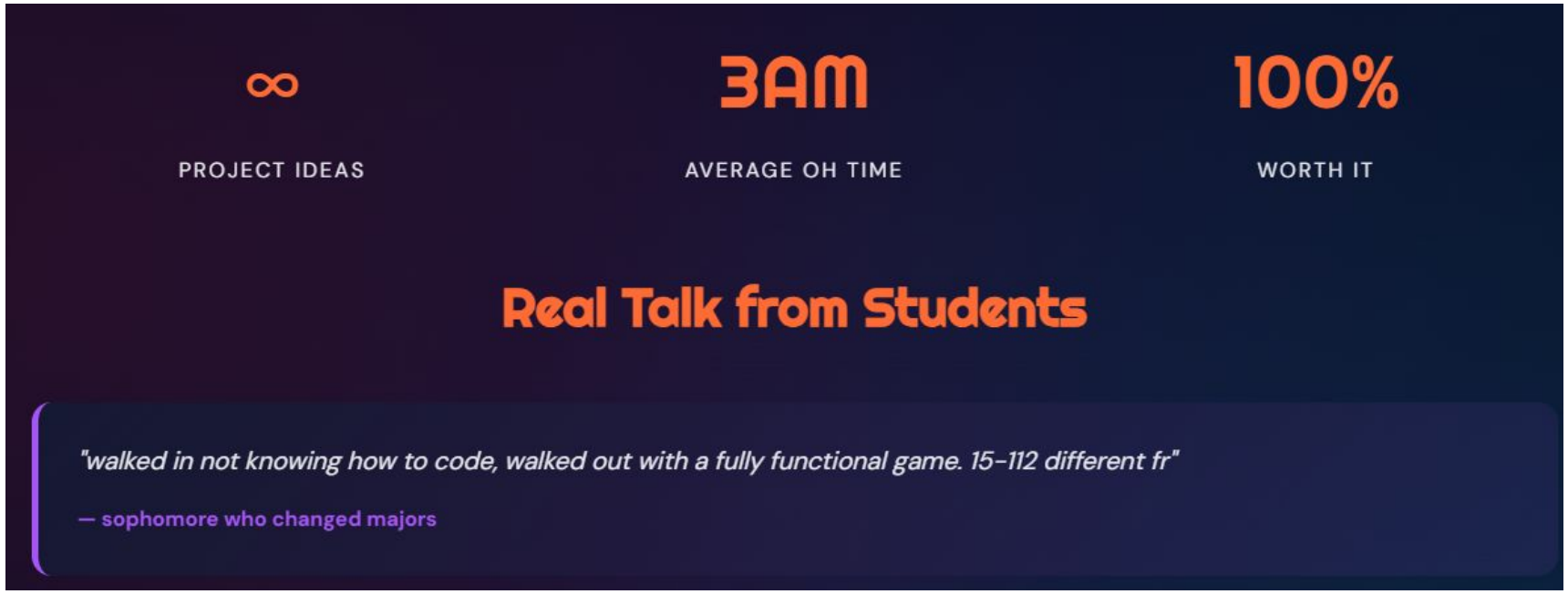
- Websites need to be hosted somewhere. Let's use Github Pages
- HTML is pretty easy to modify, rearrange, and pattern-match. If AI gives us a start with placeholder content, we can replace it with our own
- Let's let AI mostly handle the CSS and basic Javascript by describing our desired appearance and behavior

Quick Github demo
(Read project1 and go to OH if you'd like help!)

“Make a 15-112 fan page that appeals to Gen Z”







Chat is this cringe

- Ok, so we're not going to use that to increase 15-112 enrollment.
- …and there's very little actual information on that page
- …*but* it really doesn't look half bad. Or at least, it certainly has a *distinctive* look. We could use this as a starting point.

Demo: Make a website, make a change, and get it on Pages

Suggestions

- Attach your resume to your prompt! The content may not be well-written, but it'll make for a good start
- Be descriptive in your prompts, and ask for the most important features first
- Iterate until you get something that looks and feels about right, then update the content
- Regularly check how things look, and keep an eye out for bugs!
- Github Pages will only rebuild about 10 times per hour, so (for this project) commit when you want to save your progress, and push when you're done for the day and want to publish

w3schools.com has good HTML examples

- Add an image:
  - `<img src="myPicture.jpg" width="104" height="142">`
  - Make sure to include the picture in your github repository, and change src to be a relative path to that file

- Add a link:
  - `<a href="https://www.w3schools.com">This is a link</a>`
  - The path can be a full URL or a relative path to another .html file or item in your github repository

- More: https://www.w3schools.com/html/html_basic.asp

Go forth and make cool stuff