Lessons Learned From Building GitHub Copilot(s)

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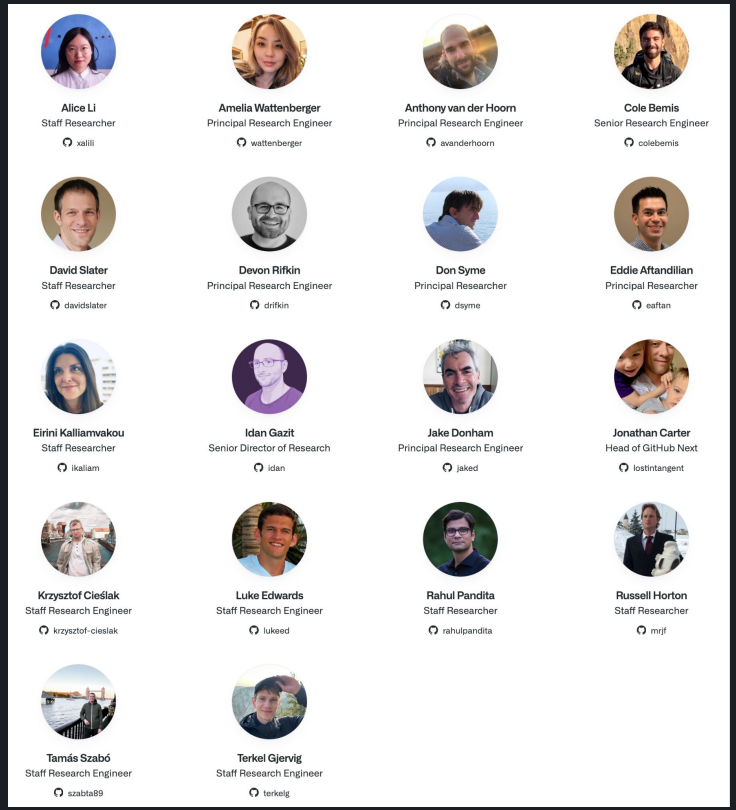
AI devtools are changing software development

- GitHub Copilot launched in June 2021. Today:
  - 1.8M paying users
  - 50% of users' code is written by Copilot
- Next generation of tools are coming
  - Copilot Workspace, Devin, Cursor, et al.

GitHub Next builds AI devtools

- We are a research/advanced R&D team within GitHub
- Created the original GitHub Copilot with OpenAI
- Also created Copilot X and, most recently, Copilot Workspace
- … and have also tried a bunch of stuff that didn’t succeed

The GitHub Next Team



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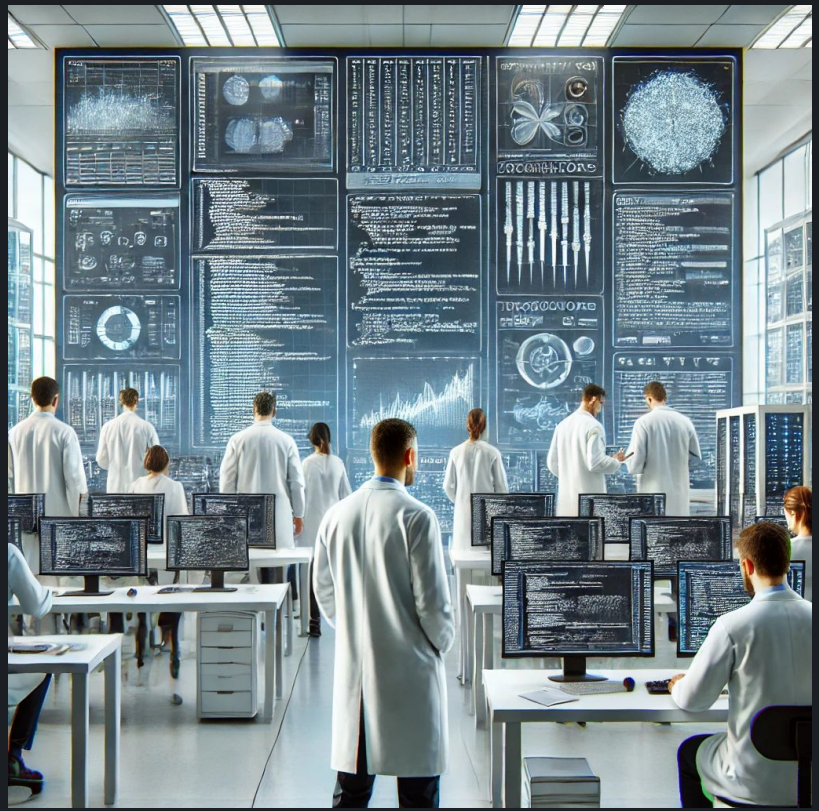
Outline

- Organizational lessons
- Technical lessons
- Conclusion

Organizational lessons



ORG1: Think big

A small team can build a big thing

Introducing GitHub Copilot: your AI pair programmer

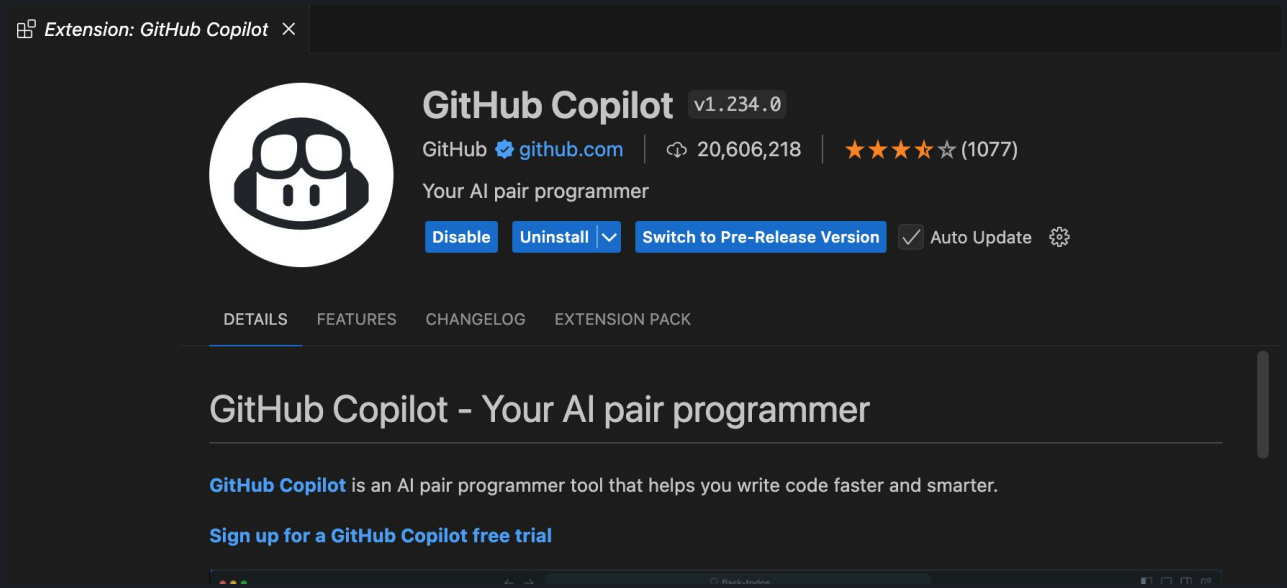
Today, we're launching a technical preview of GitHub Copilot, a new AI pair programmer that helps you write better code.

Nat Friedman · @nat

June 29, 2021 | Updated February 23, 2022 | 1 minutes

Share:

Non-adjacency



ORG2: Deliver tangible results frequently

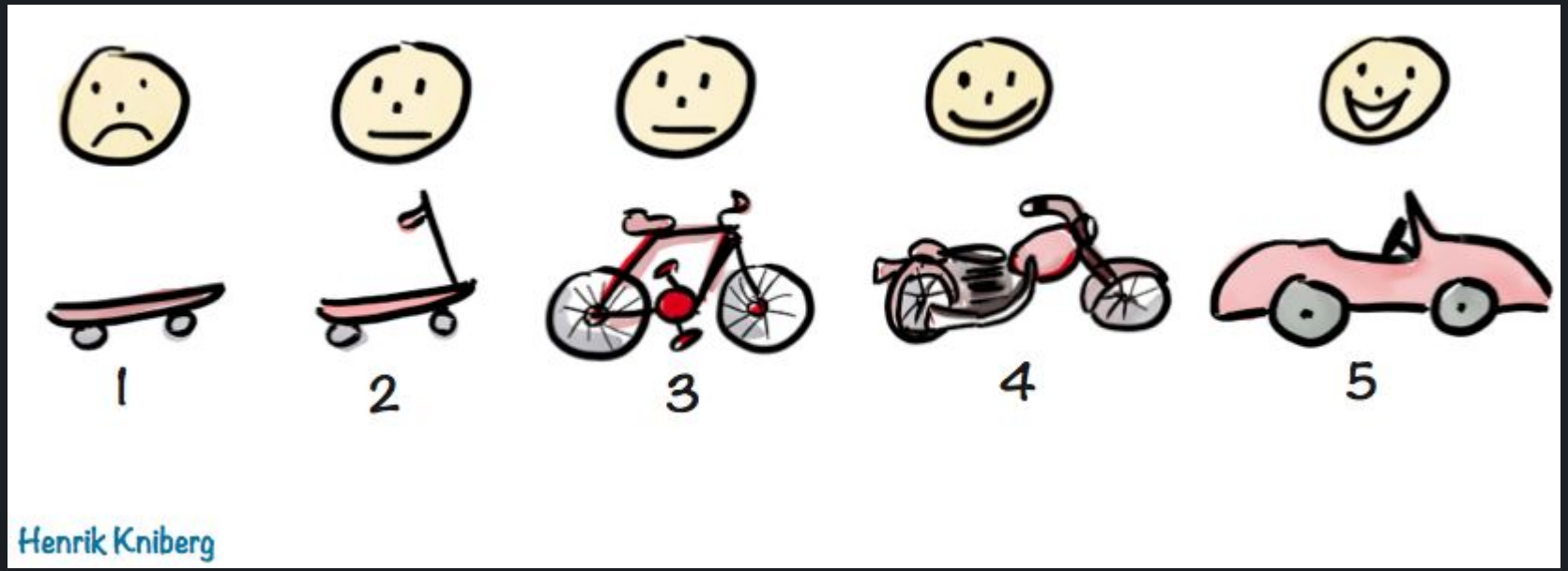
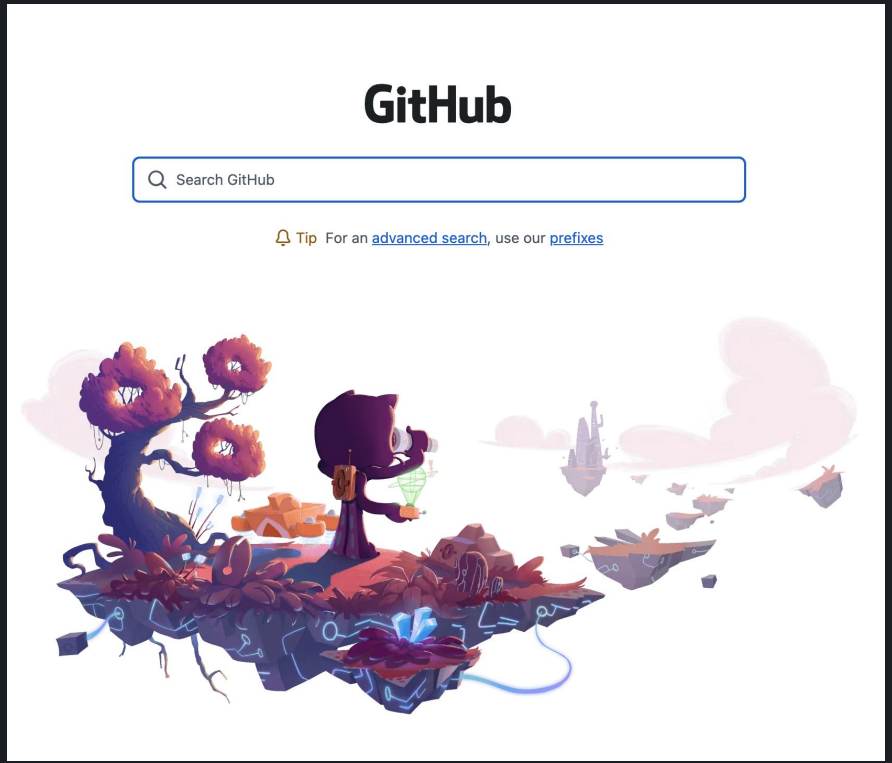
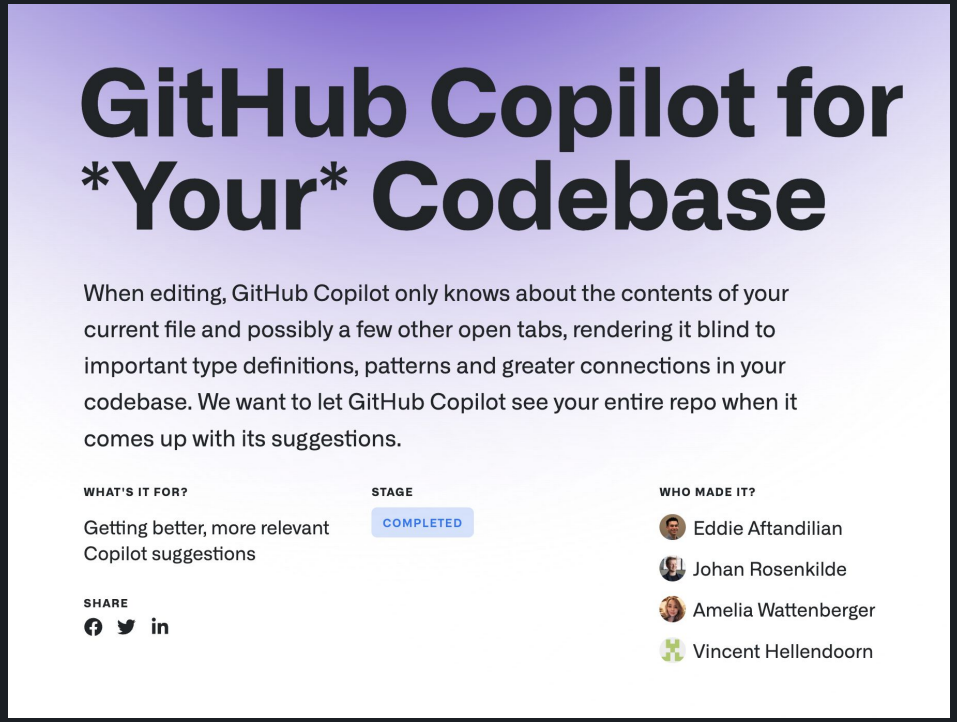


Image credit: https://blog.crisp.se/2016/01/25/henrikkniberg/making-sense-of-mvp

Retrieval application 1: NL code search



Retrieval application #2: customized Copilot



Retrieval application #3: Copilot for Docs

ORG3: Create urgency via deadlines

ORG4: Be disciplined in project selection and continuation

🪦 SpecLang 🪦

SpecLang

Can we develop software entirely in natural language, and let an AI-powered toolchain manage the implementation?

WHAT'S IT FOR?

End-to-end development in natural language

STAGE

RESEARCH PROTOTYPE

WHO MADE IT?

 Johan Rosenkilde

 Russell Horton

 Krzysztof Cieślak

 Jonathan Carter

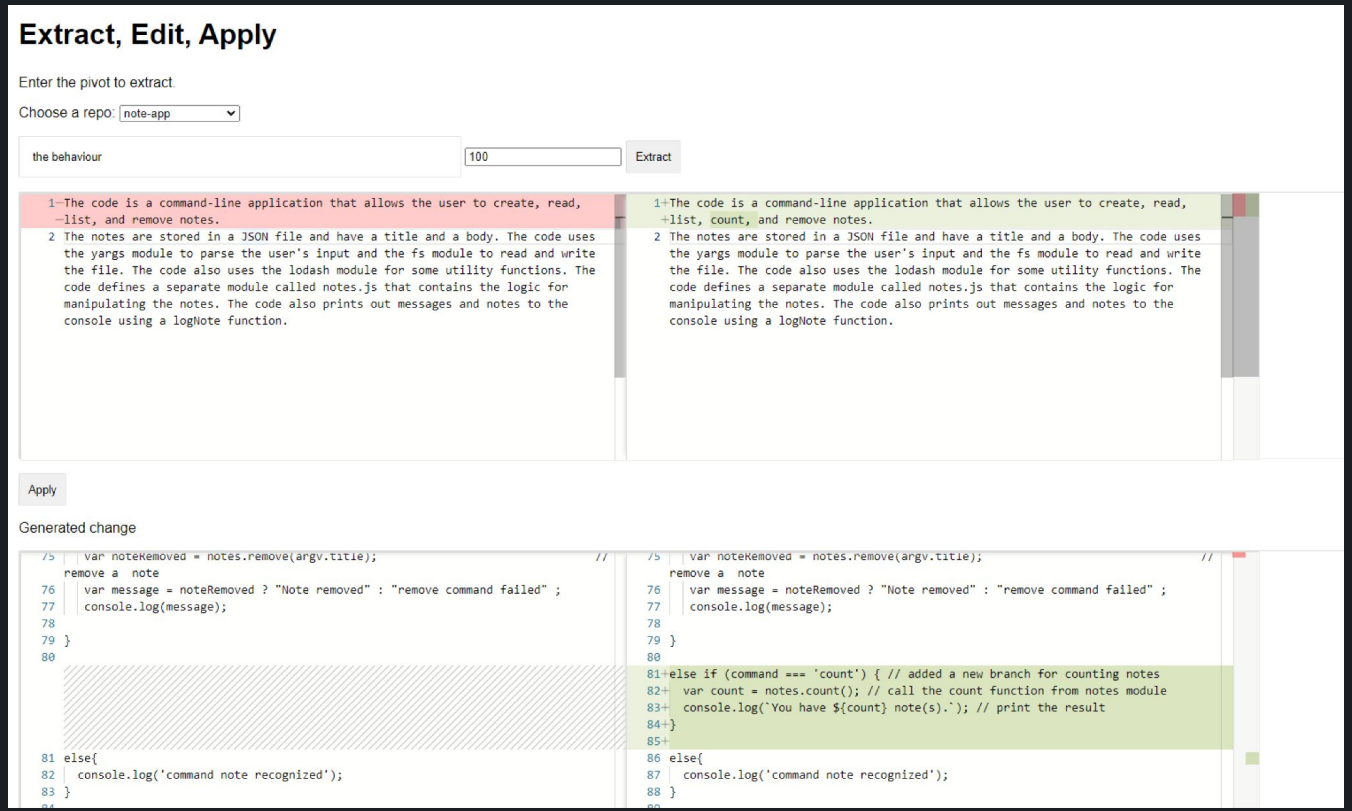
SHARE

ORG5: Beware of long term project ownership

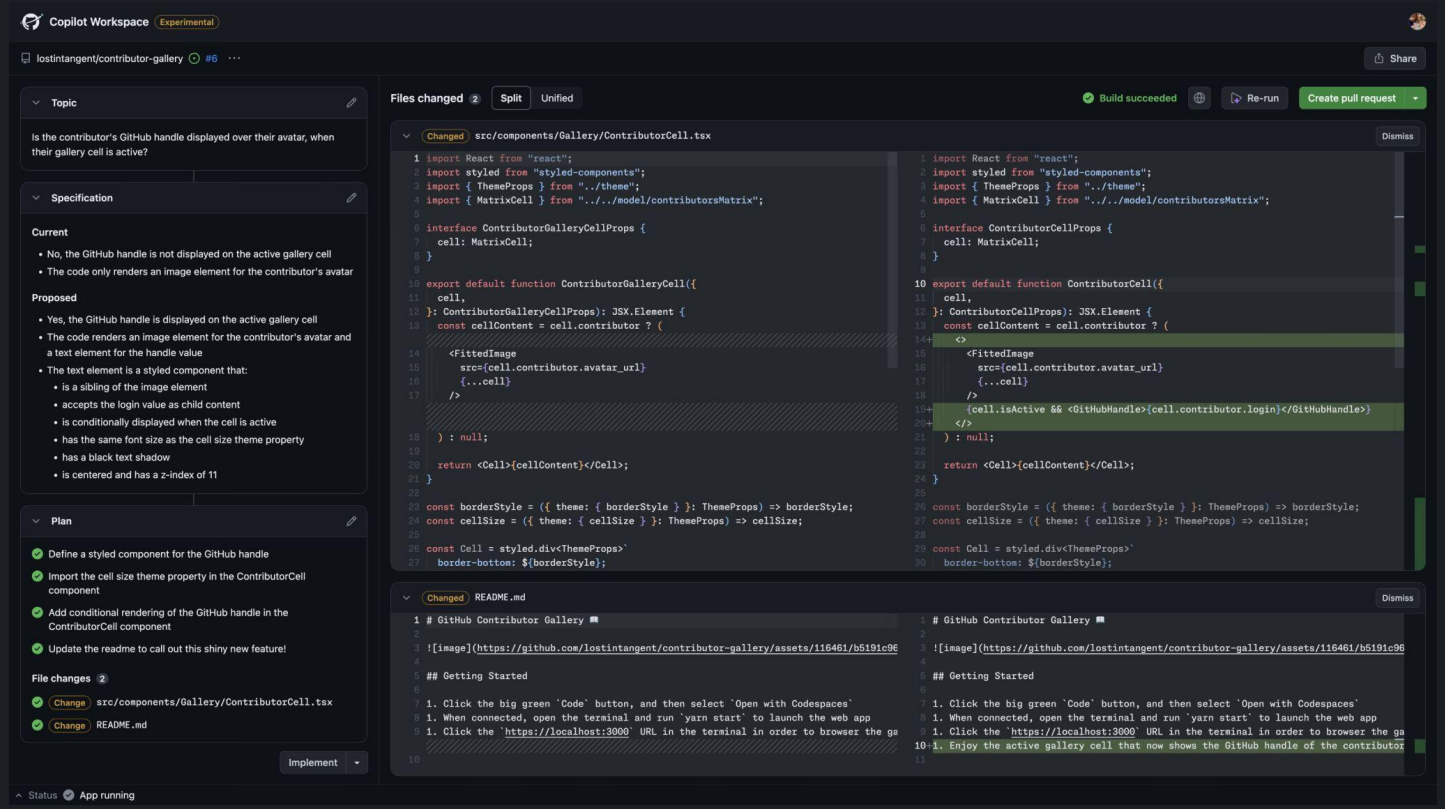
Technical lessons

TECH1: UX is critical in ~~AI~~ developer tools

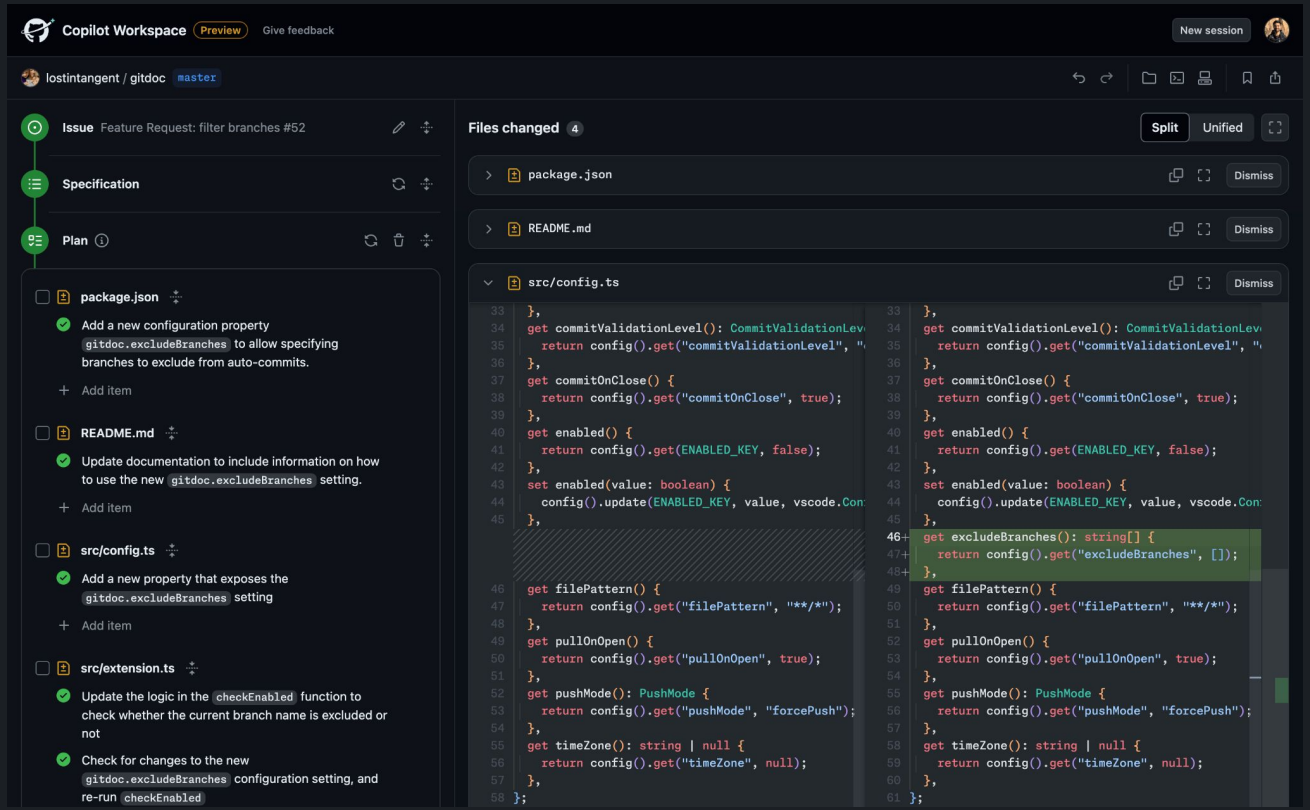
Copilot Workspace UI prototype



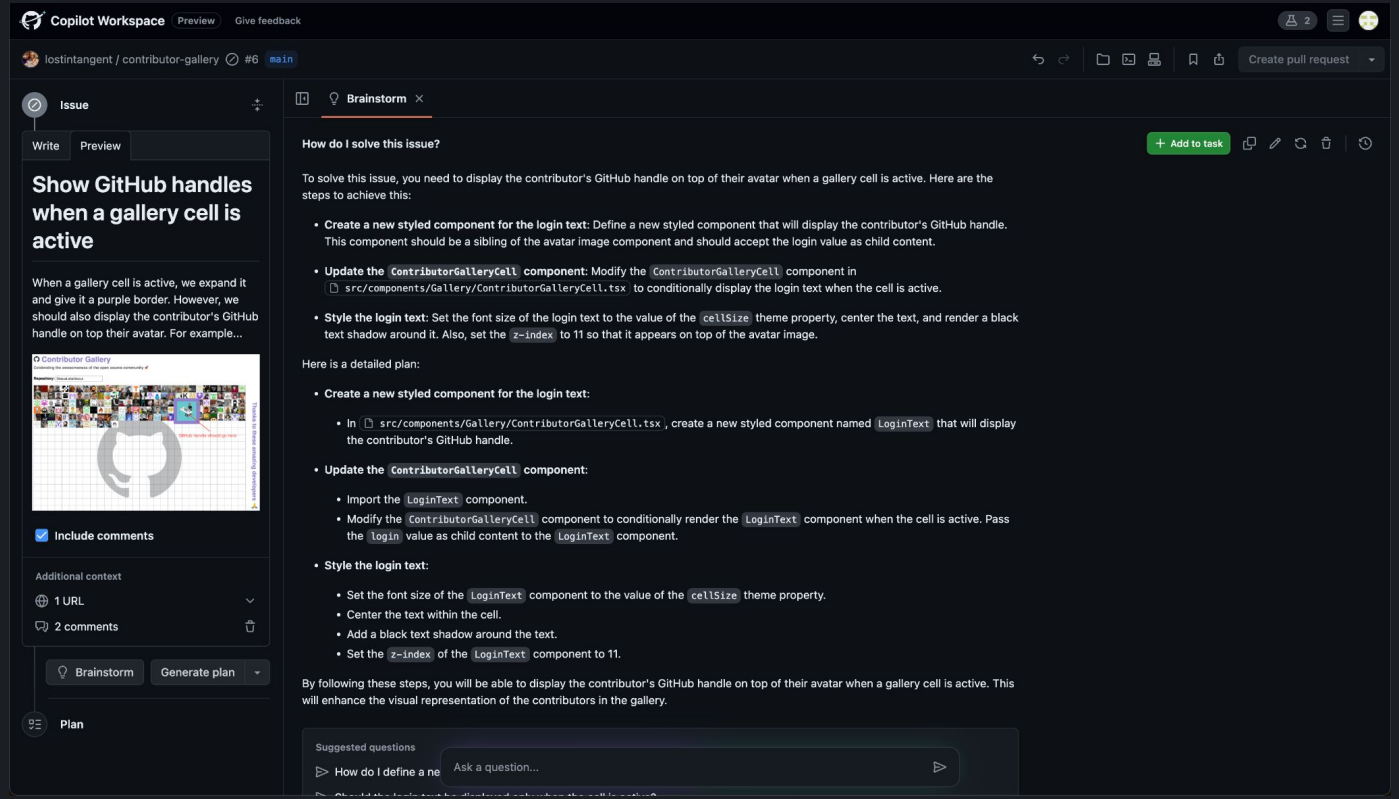
Copilot Workspace UI v1



Copilot Workspace UI v2



Copilot Workspace today

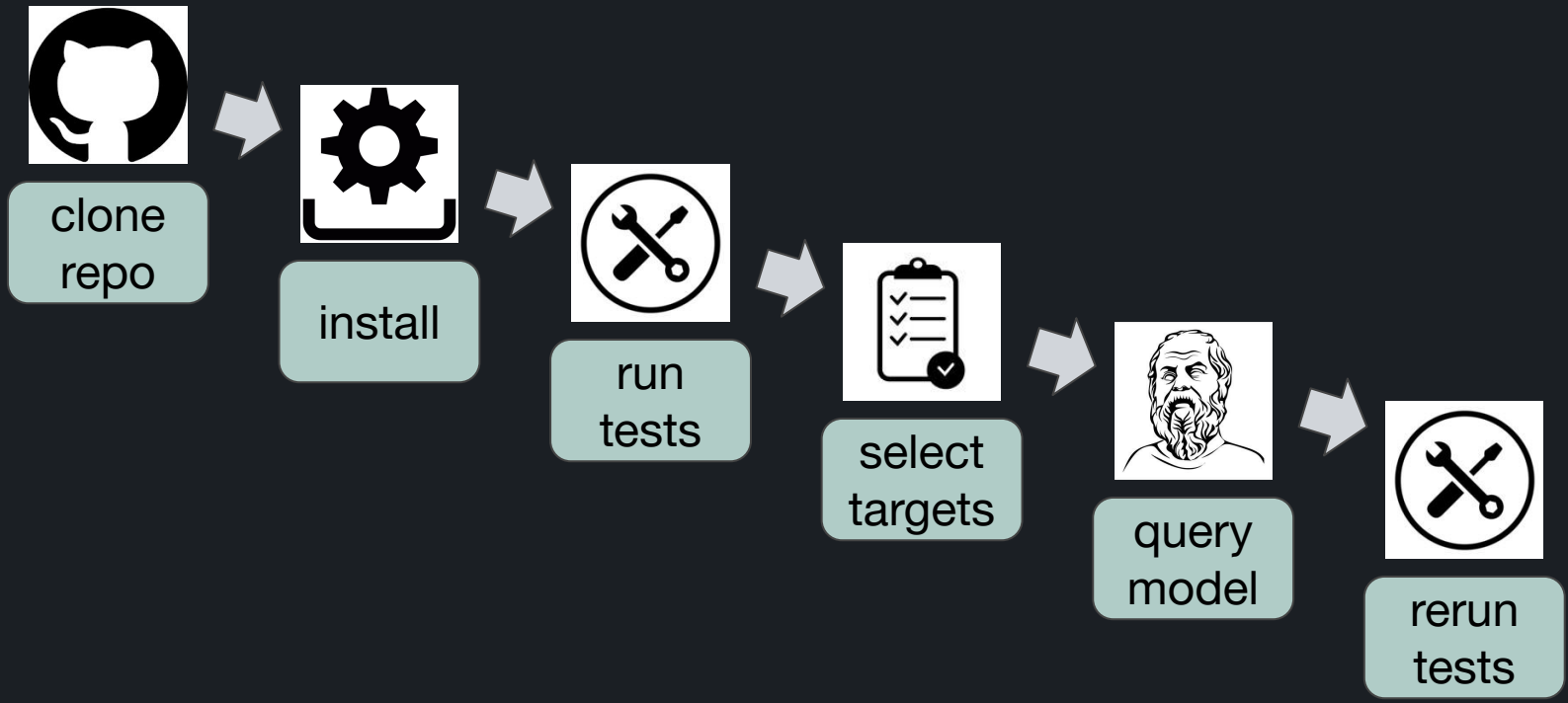


TECH2: Build a prototype ASAP

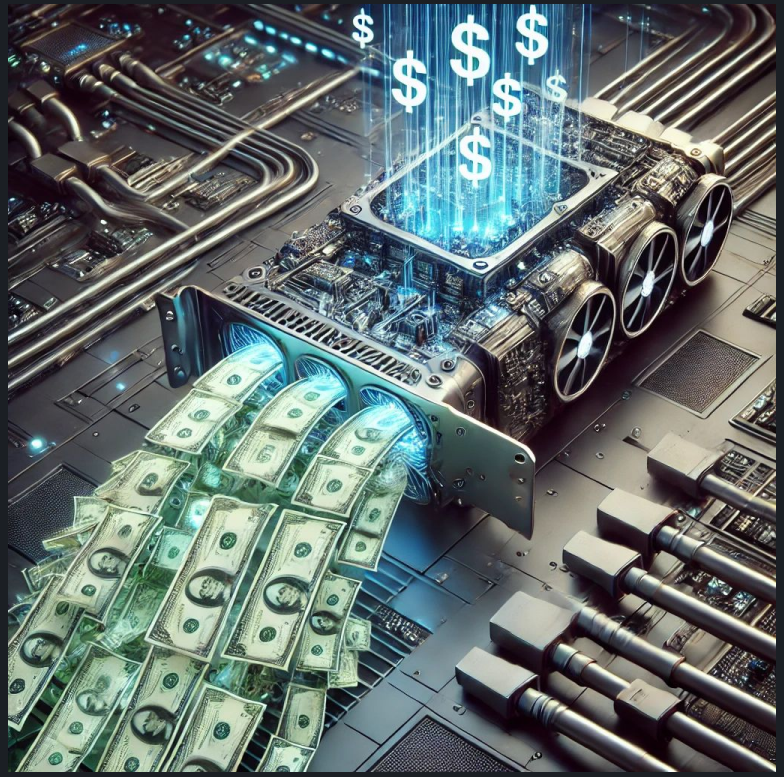
TECH3: Do the simplest thing first

vs.

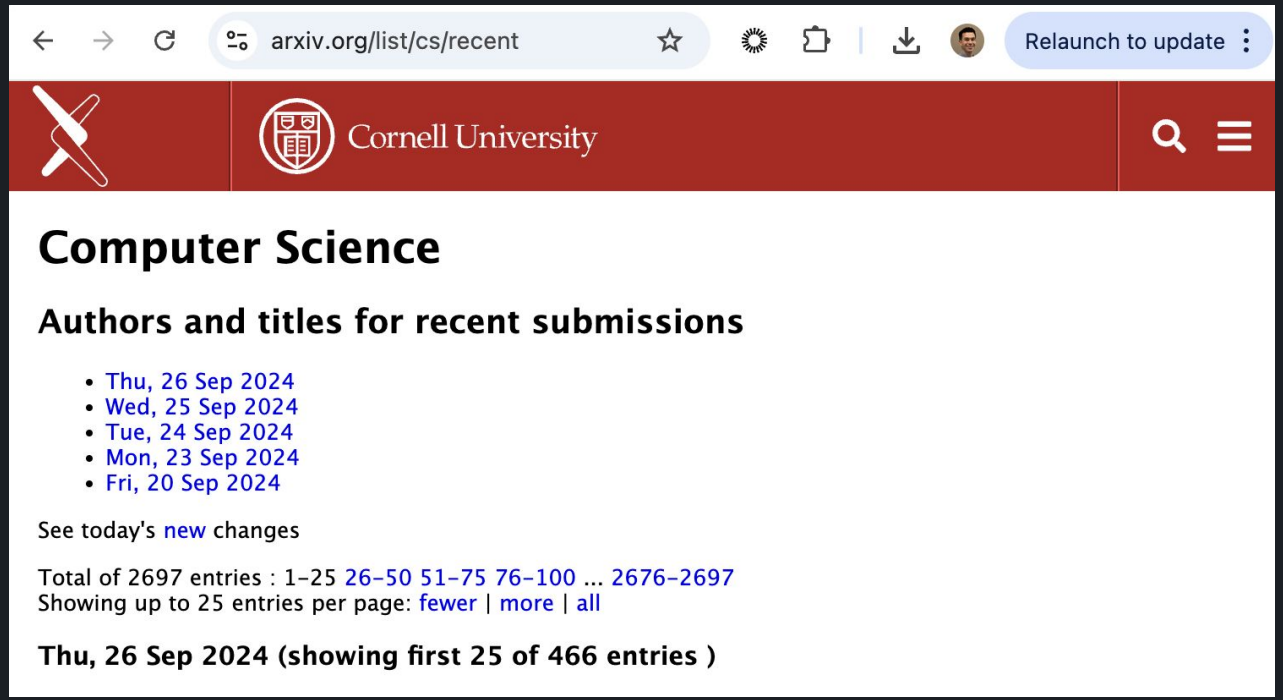
TECH4: Build an evaluation suite



TECH5: Don’t over index on cost

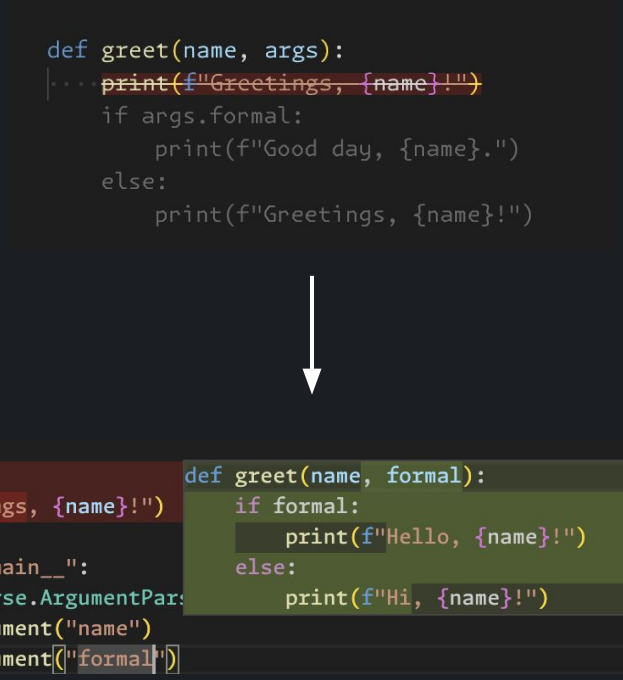


TECH6: Keep an eye on the literature



TECH7: Dogfood intensively

Addressing dogfood feedback in Copilot NES



Conclusion

Think big

GitHub Next

GitHub Next investigates the future of software development.

We are a team of researchers and engineers at GitHub, exploring things beyond the adjacent possible. We prototype tools and technologies that will change our craft. We identify new approaches to building healthy, productive software engineering teams.

UX is critical in ~~AI~~ developer tools

Dogfood intensively