

# Using GitHub Copilot CHAT

 GITHUB

# GitHub Fundamentals—with Interactivity

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 Interactive

[What you'll learn](#) [Is this live event for you?](#) [Schedule](#)

GitHub is a central hub for most open source projects, and it's the biggest hosting platform for storing source code versioned by Git. Yet it still manages to be highly underutilized. Correctly managed, GitHub can be a proven record of your work and interests, a résumé that can be used as leverage in salary negotiations, a hosting platform to promote yourself or your projects, a CI/CD platform to deliver your software to millions, and a fantastic collaborative tool for your team to facilitate communication among developers. And GitHub can also be your go-to place for solving daily programming challenges and fixations.

Join expert Lukasz Dynowski to learn everything you need to know to get started with GitHub. In a little over an hour, you'll build a complete open source project, create a web page and a wiki to promote it, and discover how to maintain and collaborate with others on your project.

YOUR INSTRUCTOR



Lukasz Dynowski

**Lukasz Dynowski** is an independent consultant who in his career was involved in over 150+ projects. Counting over 10 years of experience as a software engineer Lukasz was doing Full-Stack, DevOps, Software Architecture, as well as...

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(••) WEB APIS

# API Styles Fundamentals

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Understanding trade-offs and choosing the correct solution for your architecture

In this course, you'll:

- Learn how a variety of APIs are designed
- Understand the differences among API communication methods
- Learn which API design decisions are best for which use cases

## Course description

If you only have a hammer, everything begins to look like a nail, but sticking with a single API style is limiting. Nowadays, a service or microservice has several APIs, and they must all be well-defined.

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# Topics

- **LLMs**
- **GitHub Copilot X**
- **Prompt Engineering**
- **Warning AI**
- **Labs**

# OBJECTIVES

- ✓ Chat
- ✓ Copilot
- ✓ CLI

- ✓ Refactoring
- ✓ Testing
- ✓ Documentation
- ✓ Time complexity
- ✓ Secure
- ✓ Productivity
- ✓ LLMs
- ✓ Critical thinking



SELL ME  
THIS  
PEN



IT'S AI-  
POWERED



**ChatGPT**





FORBES > INNOVATION > AI

# ChatGPT Is The Fastest Growing App In The History Of Web Applications

**Cindy Gordon** Contributor 

*CEO, Innovation Leader Passionate about  
Modernizing via AI*

Follow

Feb 2, 2023, 06:24pm EST



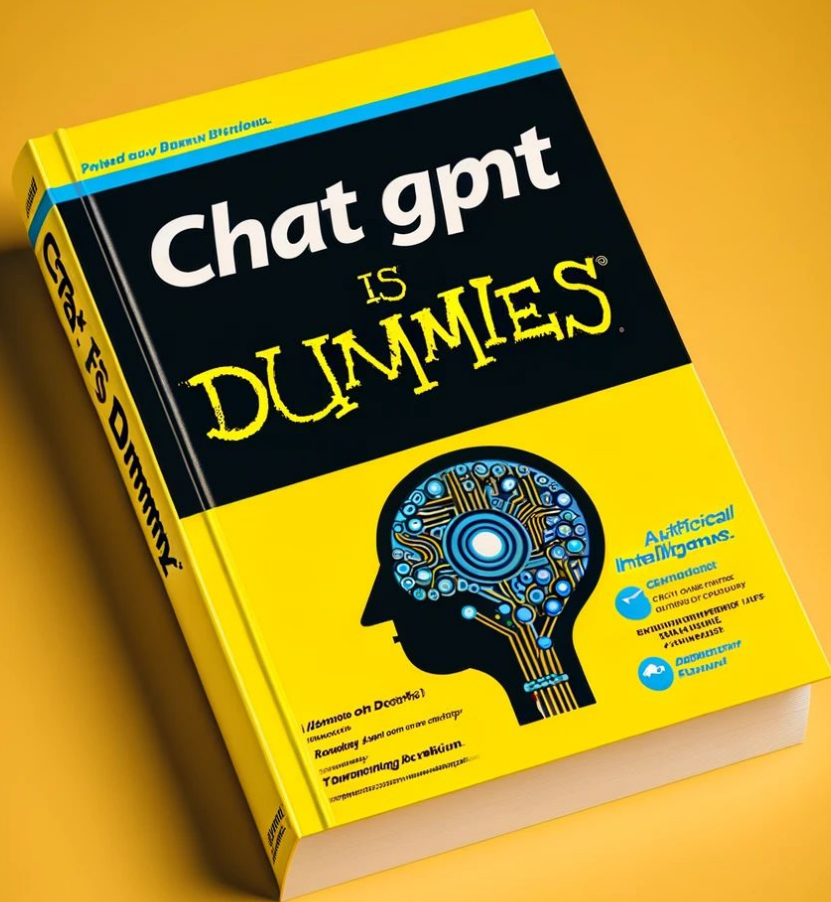
UBS research just confirmed that ChatGPT is the "fastest-growing consumer application in history," according to research from [UBS](#) research just announced that ChatGPT. "In 20 years following the Internet space, we cannot recall a faster ramp in a consumer internet app. By comparison, TikTok took nine months to reach 100 million monthly users, and Instagram about 2.5 years." Other popular online services have taken longer to hit the one million user mark. Instagram being the the closest. Another comparison is when [Netflix](#) was launched as a subscription service in 1999, the one million user mark took over 3.5 years to reach this many users.

Already at over one million users in just five days since launching in



The background is a deep navy blue space scene. It is filled with numerous small, bright white and light blue stars of varying sizes. Several constellations are faintly visible, with thin white lines connecting the stars. Notable constellations include a scorpion-like shape on the left and a more complex, multi-pointed star pattern on the right. The overall effect is a cosmic, starry night sky.

# LLMs





|                 |             |                            |
|-----------------|-------------|----------------------------|
| <b>Jun</b>      | <b>2020</b> | <b>GPT-3</b>               |
| <b>Jun</b>      | <b>2021</b> | <b>GitHub Copilot</b>      |
| <b>November</b> | <b>2022</b> | <b>ChatGPT</b>             |
| <b>March</b>    | <b>2023</b> | <b>Google PaLM</b>         |
| <b>November</b> | <b>2023</b> | <b>GitHub Copilot Chat</b> |
| <b>February</b> | <b>2024</b> | <b>Google Gemini 1.5</b>   |

# Beware LLMs

## Auto-Regressive LLMs Suck !

- ▶ **Auto-Regressive LLMs are good for**
  - ▶ Writing assistance, first draft generation, stylistic polishing.
  - ▶ Code writing assistance
- ▶ **What they *not* good for:**
  - ▶ Producing factual and consistent answers (hallucinations!)
  - ▶ Taking into account recent information (anterior to the last training)
  - ▶ Behaving properly (they mimic behaviors from the training set)
  - ▶ Reasoning, planning, math
  - ▶ Using “tools”, such as search engines, calculators, database queries...
- ▶ **We are easily fooled by their fluency.**
- ▶ **But they don't know how the world works.**

Y. LeCun

▶ But they don't know how



<https://www.youtube.com/watch?v=pd0JmT6rYcl>



# GitHub

DEMO

🔍 path:\*\*/dockerfile OR path:\*\*/.dockerfile OR path:\*\*/dockerfile.\*



🔔 Tip For an [advanced search](#), use our [prefixes](#)

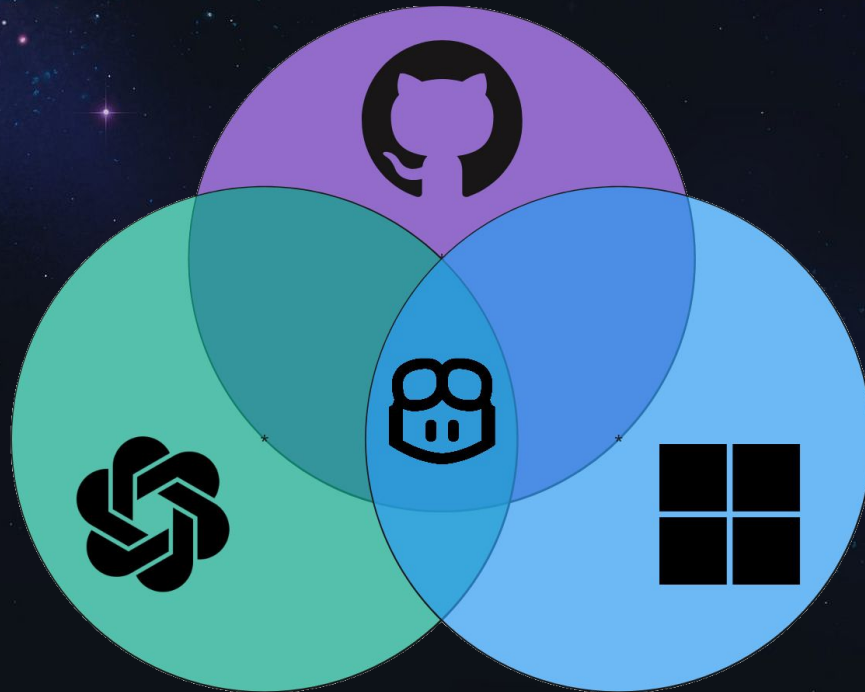




GitHub Copilot X



# GitHub Copilot







**55%**



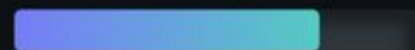
**Faster  
Coding**



**46%**



**Code  
written**



**75%**



**More  
fulfilled**

# Using GitHub Copilot Chat correlates with better code quality

85% of developers felt more confident in their code quality when authoring code with GitHub Copilot and GitHub Copilot Chat

85%



Code reviews were more actionable and completed 15% faster than without GitHub Copilot Chat

15%



88% of developers reported maintaining flow state with GitHub Copilot Chat

88%



# Participant rating: authoring & reviewing code with GitHub Copilot Chat

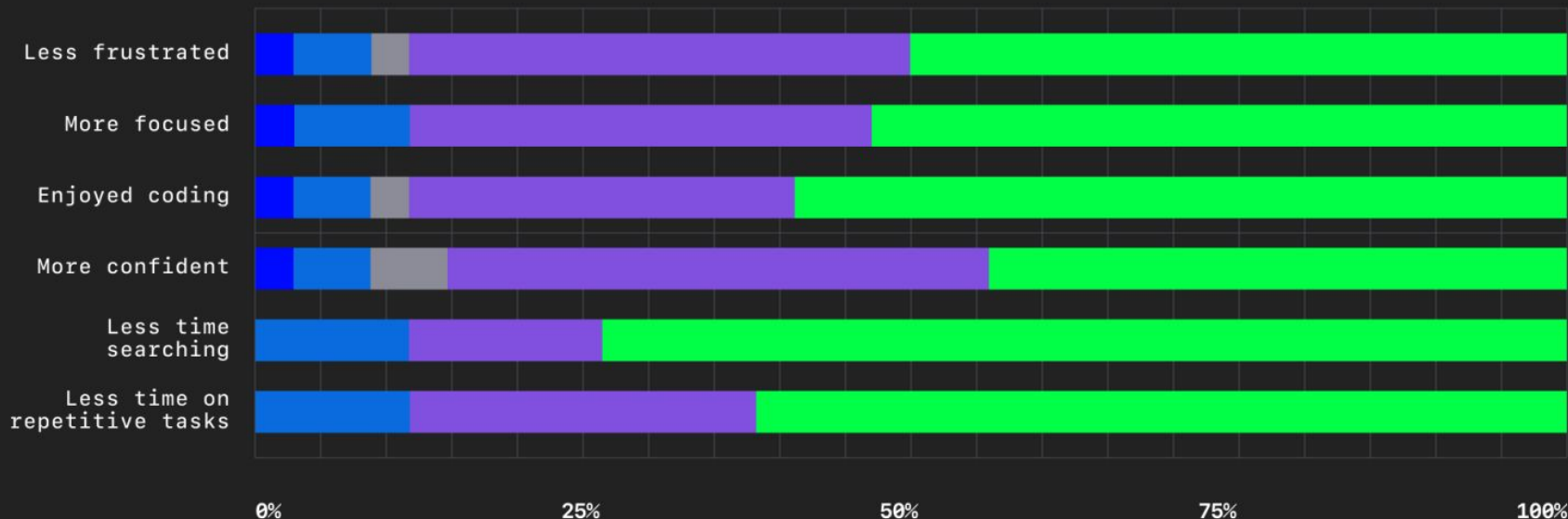
STRONGLY DISAGREE

DISAGREE

NEUTRAL

AGREE

STRONGLY AGREE



# Can Generative AI Improve Developer Productivity?

HERE'S WHAT THE REAL-LIFE DATA SUGGESTS



More engineering teams are experimenting with generative AI tools like Copilot to ostensibly improve productivity and developer experience. **But what does the quantitative data say?**

Using actual engineering data across a sample of nearly 800 developers in Uplevel's customer population, Uplevel Data Labs analyzed the difference in how teams with and without Copilot access performed according to objective metrics like cycle time, PR throughput, bug rate, and extended working hours ("Always On" time).

The expectation is that Copilot helps developers write code faster and smarter, which should lead to lower cycle time, more PRs, and fewer bugs without increasing the risk of burnout. Here's what we found:

**Copilot access provided no significant change in efficiency metrics.**

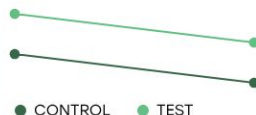
When comparing PR cycle time, throughput, and complexity along with PRs with tests, Copilot neither helped nor hurt the developers in the sample, and also did not

**Developers with Copilot access saw a significantly higher bug rate while their issue throughput remained consistent.**

**+41%**  
IN BUG RATE

**Copilot access was not effective in mitigating the risk of burnout.**

SUSTAINED ALWAYS ON PRE  
AND POST COPILOT ACCESS





# GitHub Copilot

**Codex > Chat GPT 3.5 Turbo > GPT 4\***



# Copilot Chat Can

- **Generate unit test**
- **Generate documentation**
- **Generate code for a specific task**
- **Explain code**
- **Propose code fixes**
- **Answer coding questions**



# GitHub Copilot Chat

Preview

GitHub  [github.com](https://github.com) |  5,049,233 installs |  (86) | Free Trial

AI chat features powered by Copilot

## Installation

Launch VS Code Quick Open (Ctrl+P), paste the following command, and press enter.

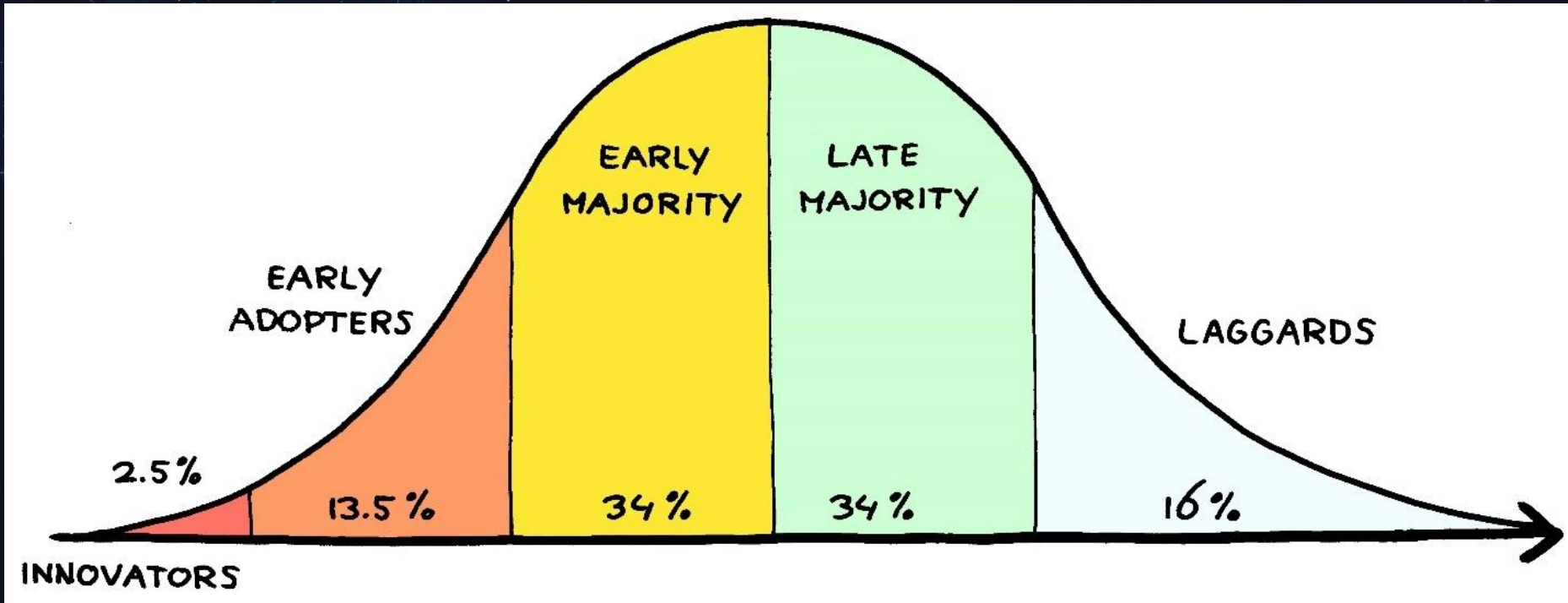
```
ext install GitHub.copilot-chat
```

Copy

[More Info](#)

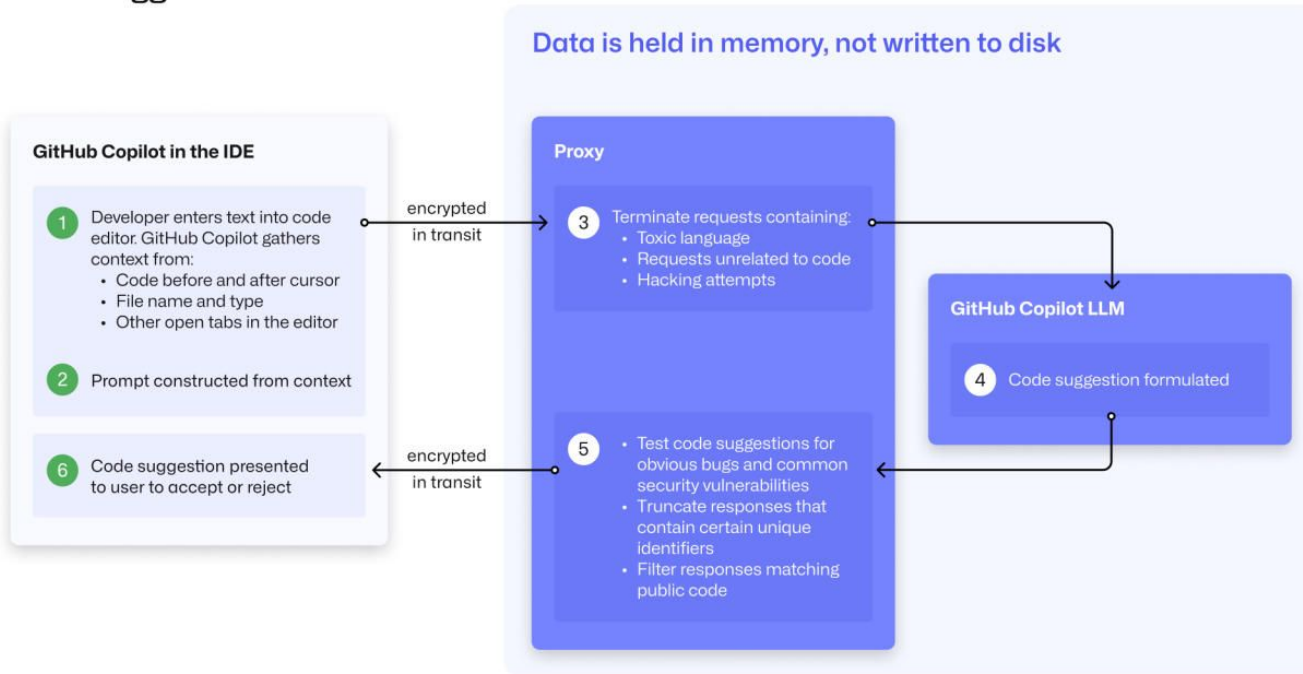


# Adoption Life Cycle



The screenshot shows the Visual Studio Code interface. On the left, the 'Extensions' view is open, displaying a list of installed and available extensions. The 'Copilot' extension is highlighted with a yellow box. The main area shows the 'Welcome' page with sections for 'Start', 'Recent', and 'Walkthroughs'. The 'Start' section includes links to 'New File...', 'Open File...', 'Open Folder...', 'Clone Git Repository...', and 'Connect to...'. The 'Recent' section shows the current workspace and a recent file. The 'Walkthroughs' section lists several guides, including 'Get Started with VS Code', 'Learn the Fundamentals', 'Boost your Productivity', 'GitHub Copilot', and 'Get Started with Python Development'. The bottom status bar shows the current file is 'main\*' and the workspace is 'Live Share'.

## The life cycle of a GitHub Copilot code suggestion in the IDE



<https://resources.github.com/learn/pathways/copilot/essentials/how-github-copilot-handles-data/>

# Prompt Engineering Tips

1. **Goal**
2. **Clarity**
3. **Context**
4. **Refine**

# **WARNING** Copilot Chat

- Limited scope
- Potential for bias
- Security risks
- Inaccurate code
- Matches with public code



Amazon CodeWhisperer

Gemini Code Assist

**Codey: Google AI's**

Code Llama





**LABS**





Does it work?

*"60% of the time, It  
works every time"*

And what  
happened  
next?



He shipped it  
to PROD!