

Introduction to GitHub Copilot

Beata Zalewa, Lublin Ms, 10.07.2024

About me



Security Architect



Consultant



Microsoft Certified Trainer



AI & Cybersecurity Practitioner



Developer



Freelancer



Azure @ ❤️



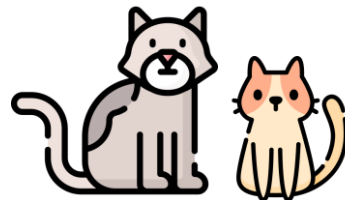
Google Cloud



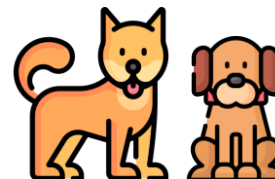
1 Husband



1 Daughter



2 cats



2 dogs



Detective stories



Photography



What is Copilot?

- GitHub Copilot is an **AI coding assistant** that helps you write code faster and with less effort, providing suggestions as you type.
- **It integrates with your IDE**, offering code completions and the ability to ask questions or get explanations about code.
- Copilot **supports a wide range of programming languages**, including JavaScript, Python, Ruby, Go, and more.
- It has been shown to **increase developer productivity** and accelerate software development.
- **Available through paid plans**, with a free trial for individuals and free access for verified students, teachers, or open-source maintainers.
- GitHub Copilot **continues to evolve**, adding new features and capabilities to assist developers in their coding tasks.



What is Copilot?

- Cloud-based Generative AI tool
- Turns natural language prompts into coding suggestions
- Trained on billions of lines of code
- Functions “similar to” an AI pair programmer
- Works across dozens of languages
- Works on multiple IDEs (Azure Data Studio, JetBrains IDEs, Vim/Neovim, Visual Studio, Visual Studio Code)
- Not intelligent – may seem that way – or not ...
- Sometimes more like a magnified autocomplete



How Copilot works?

- GitHub Copilot uses a new language-generating algorithm by OpenAI called Codex



Codex Model



Read terabytes of Public
code & comments



<https://programmerjokes.com/github-copilot-next-ai-coder/>



How Copilot works?

- Codex algorithm has been trained on terabytes of public code which was directly pulled from GitHub and create machine learning model from our public source code and reading tones of code comments



Codex Model



Read terabytes of Public
code & comments



<https://programmerjokes.com/github-copilot-next-ai-coder/>



How Copilot works?

- At the end, code extension sends you an automated suggestion response from the extension service



Algorithm to synthesize and
create suggestions

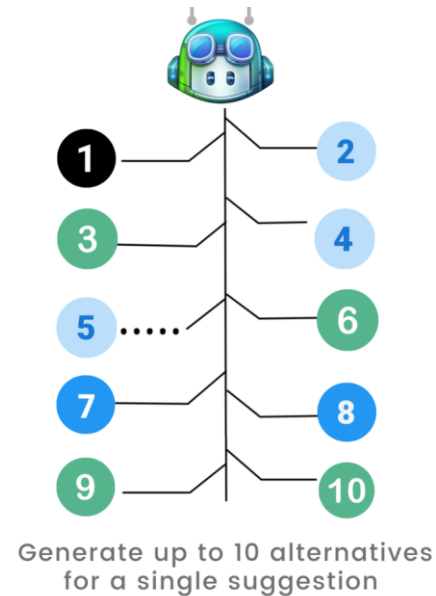
**Generate up to 10
alternatives**

<https://programmerjokes.com/github-copilot-next-ai-coder/>



How Copilot works?

- Github Copilot's Codex can generate up to 10 alternatives for single-question suggestions. This tool learns from your code and your mistakes and suggestions approval and rejections and try best and improve Codex machine learning model

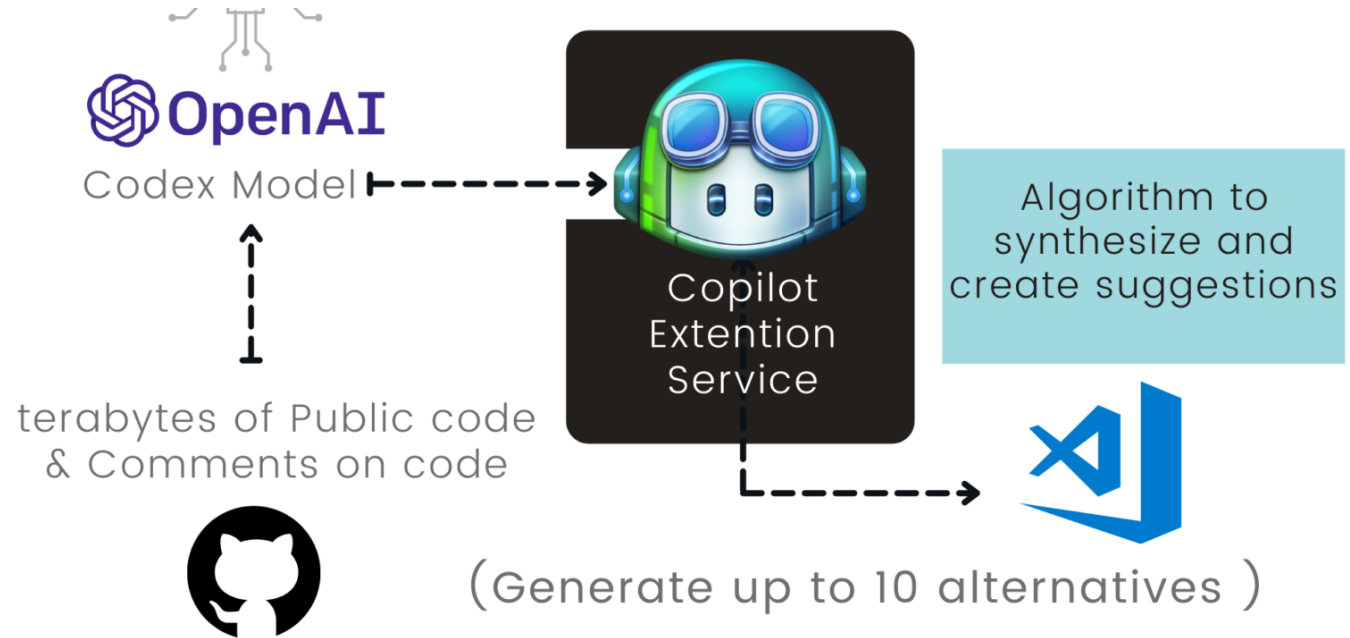


<https://programmerjokes.com/github-copilot-next-ai-coder/>



How Copilot works?

The resulting scenario of Copilot was 43% of the time, and the accuracy increased to 57% after 10 attempts.



<https://programmerjokes.com/github-copilot-next-ai-coder/>



Should my team use Copilot for Business?

Should my team use Copilot for Business? #49422

blackgirlbytes · on Mar 7, 2023 · 9 comments · 5 replies

How GitHub Copilot can help your team 🧡

GitHub Copilot helps software developers write code faster by reducing the time spent sifting through documentation, writing boilerplate code, and trying to remember syntax. With GitHub Copilot, software developers can have more time to tap into their passion for coding. Overall, this helps businesses retain investors, customers, and most importantly, software developers. (Yes, you can always replace software developers, but software developers with legacy knowledge of the codebase are invaluable to a company's success.)

Less time reading documentation 📖

In the example below, [Chris Sev](#) explains that instead of spending too much time reading documentation and context-switching, GitHub Copilot led him in the right direction.

copilot just saved me 547 minutes of reading stripe docs pic.twitter.com/f1JuRYq32i

— Chris Sev (@chris__sev) [February 8, 2023](#)

Less time writing boilerplate code 🤖

In the example below, [Kelsey Hightower](#) used GitHub Copilot to handle writing boilerplate code.

After spending a few minutes with GitHub's Copilot I can see the potential. It's autocomplete with way more context about what you're working on.

Just a simple web app but Copilot was able to generate 95% of the code for me. Makes you realize just how much boilerplate we write. pic.twitter.com/rau501Bba6

— Kelsey Hightower (@kelseyhightower) [January 24, 2023](#)

<https://github.com/orgs/community/discussions/49422>




Productivity
increases








<https://github.blog/2023-03-22-github-copilot-x-the-ai-powered-developer-experience/>




Pricing

 **Beata Zalewa** (beatazalewa)
Your personal account

[Go to your personal profile](#)

-  Public profile
-  Account
-  Appearance
-  Accessibility
-  Notifications

Access


 Billing and plans ^

Plans and usage


Spending limits


Payment information


 Emails


 Password and authentication

 Sessions

 SSH and GPG keys


 Organizations


 Enterprises

 Moderation v

Code, planning, and automation


 Repositories

 Codespaces

 Packages

 Copilot

 Pages

 Saved replies

Billing summary

Your next payment

\$10.00 Due by July 15, 2024

This amount does not include the spend on usage of metered service. View your [usage this month](#) below.

Payment information →

[Manage spending limit](#)

[View payment history](#)

[Switch to yearly billing](#)

Your recurring charges & discounts

GitHub Copilot

\$10.00/month

On Jul 15, 2024

Current plan

[Compare all plans](#)

[Upgrade](#)



GitHub Free

The basics for all developers

∞ Unlimited public/private repos

∞ Unlimited collaborators

✓ 2,000 Actions minutes/month

✓ 500MB of Packages storage

✓ 120 core-hours of Codespaces compute per developer

✓ 15GB of Codespaces storage per developer

✓ Community support

Not included:

✗ Free Codespaces usage per organization

✗ Protected branches on all repos

✗ Increase Codespaces [spend limits](#)

✗ Multiple reviewers in pull requests

✗ Required status checks

✗ Code owners

✗ Required reviewers

✗ Pages for static website hosting

✗ Web-based support


[See all features and compare plans](#)

<https://github.com/settings/billing/plans>

@beatazalewa zalnet.pl | beata@zalnet.pl



Pricing

 **GitHub Copilot**
Your AI pair programmer


Manage subscription ▼

Active subscription	Monthly payment	Next payment
Copilot Individual	\$10.00	Jul 15, 2024


You can upgrade your subscription to yearly billing or cancel any time. [Read billing documentation](#) for more details.

Usage this month

Get usage report

 **Actions**
Included minutes quota resets in 4 days. [See billing documentation](#)

> Usage minutes	0.00 of 3,000.00 min included	\$0.00
\$0.00 monthly spending limit Set up a spending limit		\$0.00

 **Packages**
Data transfer quota resets in 4 days. [See billing documentation](#)

> Data transfer out	0.00 GB of 10.0 GB included	\$0.00
\$0.00 monthly spending limit Set up a spending limit		\$0.00

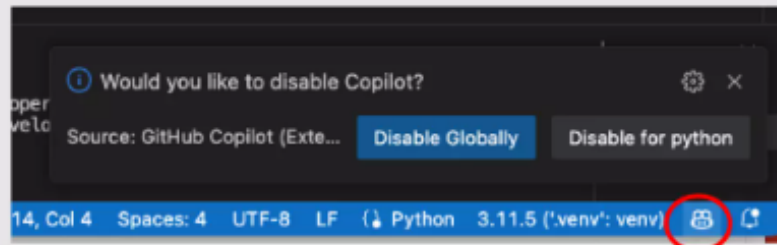
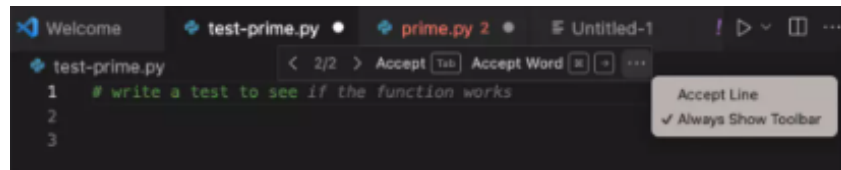
<https://github.com/settings/billing/plans>



Extensions



Shortcuts



Keyboard shortcuts for Windows

Action	Shortcut
Accept an inline suggestion	Tab
Dismiss an inline suggestion	Esc
Show next inline suggestion	Alt +]
Show previous inline suggestion	Alt + [
Trigger inline suggestion	Alt + \
Open GitHub Copilot (additional suggestions in separate pane)	Alt + Enter

Keyboard shortcuts for macOS

Action	Shortcut
Accept an inline suggestion	Tab
Dismiss an inline suggestion	Esc
Show next inline suggestion	Option (⌥) or Alt +]
Show previous inline suggestion	Option (⌥) or Alt + [
Trigger inline suggestion	Option (⌥) + \
Open GitHub Copilot (additional suggestions in separate pane)	Option (⌥) or Alt + Return

Keyboard shortcuts for Linux

Action	Shortcut
Accept an inline suggestion	Tab
Dismiss an inline suggestion	Esc
Show next inline suggestion	Alt +]
Show previous inline suggestion	Alt + [
Trigger inline suggestion	Alt + \
Open GitHub Copilot (additional suggestions in separate pane)	Alt + Enter



GitHub Copilot

Before demo



DEMOS!!!

GitHub
Copilot



GitHub
Copilot



Used resources

<https://github.com/orgs/community/discussions/49422>

<https://github.blog/2023-03-22-github-copilot-x-the-ai-powered-developer-experience/>

<https://programmerjokes.com/github-copilot-next-ai-coder/>

<https://learn.microsoft.com/en-us/training/modules/introduction-to-github-copilot/4-exercise/>

<https://learn.microsoft.com/en-us/training/modules/introduction-prompt-engineering-with-github-copilot/>

<https://docs.github.com/en/copilot/using-github-copilot/getting-code-suggestions-in-your-ide-with-github-copilot/>

I am actively seeking new opportunities and exciting challenges. If you would like to get in touch, please feel free to reach out through the following channels:

Email: beata@zalnet.pl

LinkedIn: <https://www.linkedin.com/in/beatazalewa/>

Blog: <https://zalnet.pl/blog/>

X: <https://x.com/beatazalewa>

GitHub: <https://github.com/beatazalewa/Conferences/>

