



Everything you wanted to know about AI agents

(but were afraid to ask)



CHRISTOPHER HARRISON
Senior Developer Advocate
GitHub

Agenda Session

- 01 What is AI?
- 02 What makes agents special?
- 03 Context is key
- 04 Putting it in action



What is AI?



What AI isn't



What AI isn't



Creative

Even when “hallucinating”, AI isn’t creating anything new.



Emotional

Even when it seems like it’s making a connection, it’s still a probabilistic engine



Human

Still just a computer program. An advanced computer program, but a computer program nonetheless

What is AI?



Artificial intelligence (AI) is the capability of computational systems to perform tasks typically associated with human intelligence.

(source: Wikipedia)



Large language models (LLMs) are self-supervised machine learning based on large amounts of text to process and generate natural language

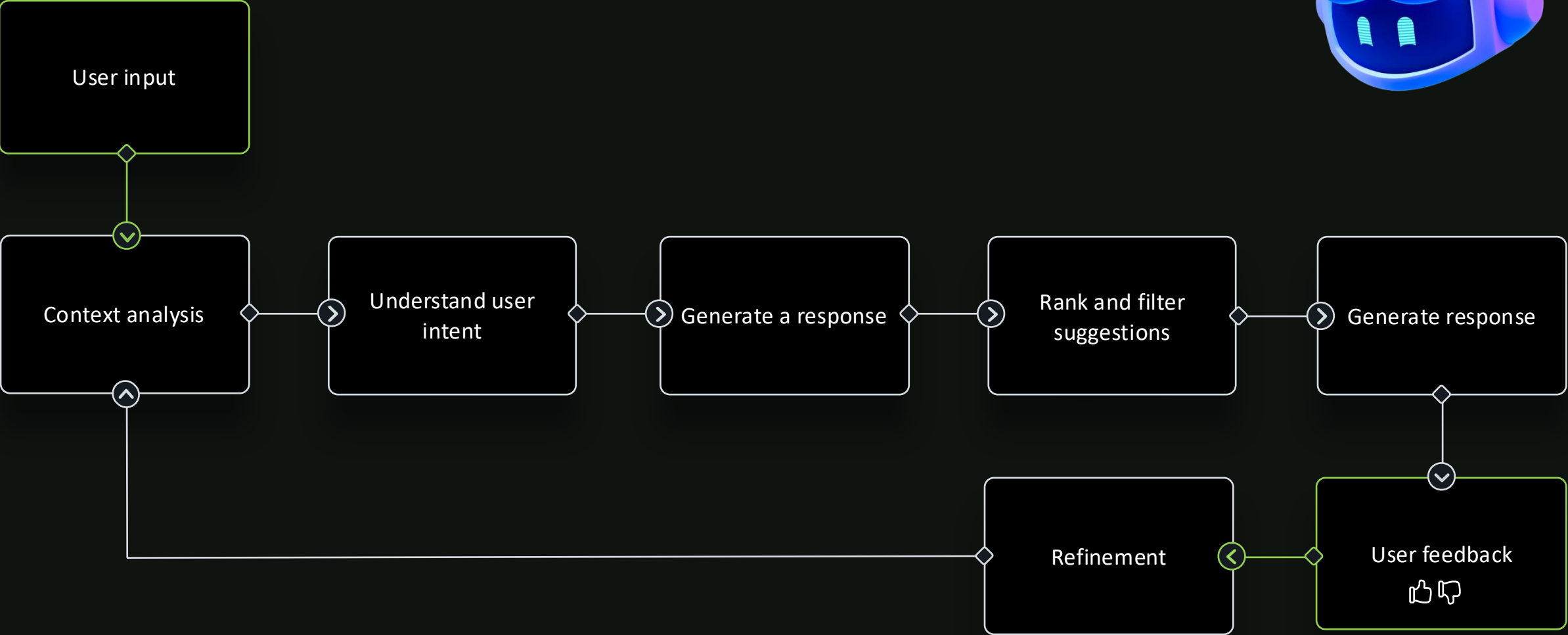


AI flow

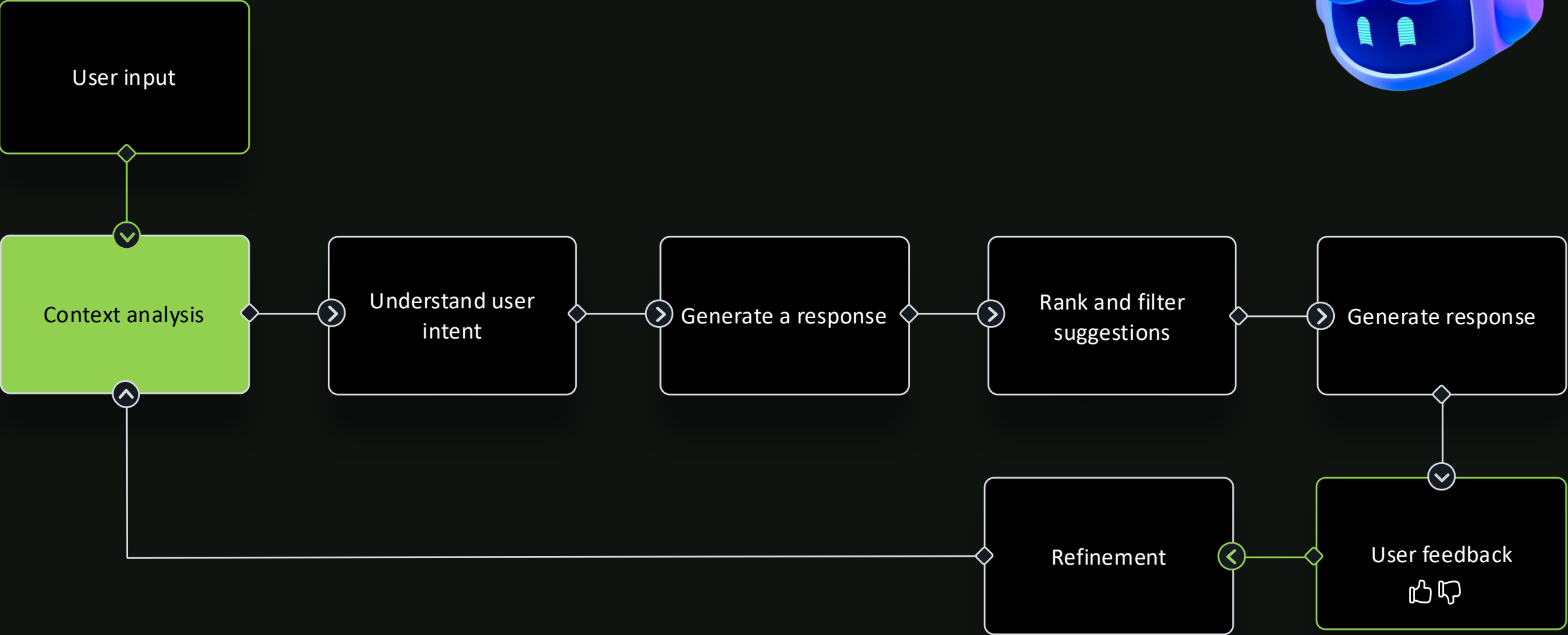
(using GitHub Copilot)



The Copilot request-response cycle



The Copilot request-response cycle





Advanced Token Breakdown

Simple Words

Original Text: The cat sat

Token Breakdown



Basic words are often single tokens, especially common ones.

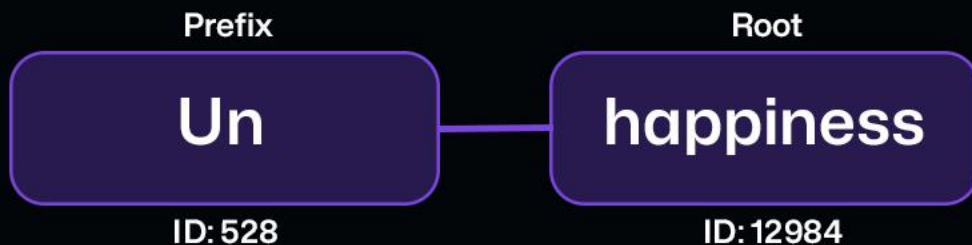


Advanced Token Breakdown

Subword Units

Original Text: Unhappiness

Token Breakdown



Common prefixes and suffixes often get their own tokens.



Advanced Token Breakdown

Rare Words

Original Text: supercalifragilisticexpialidocious

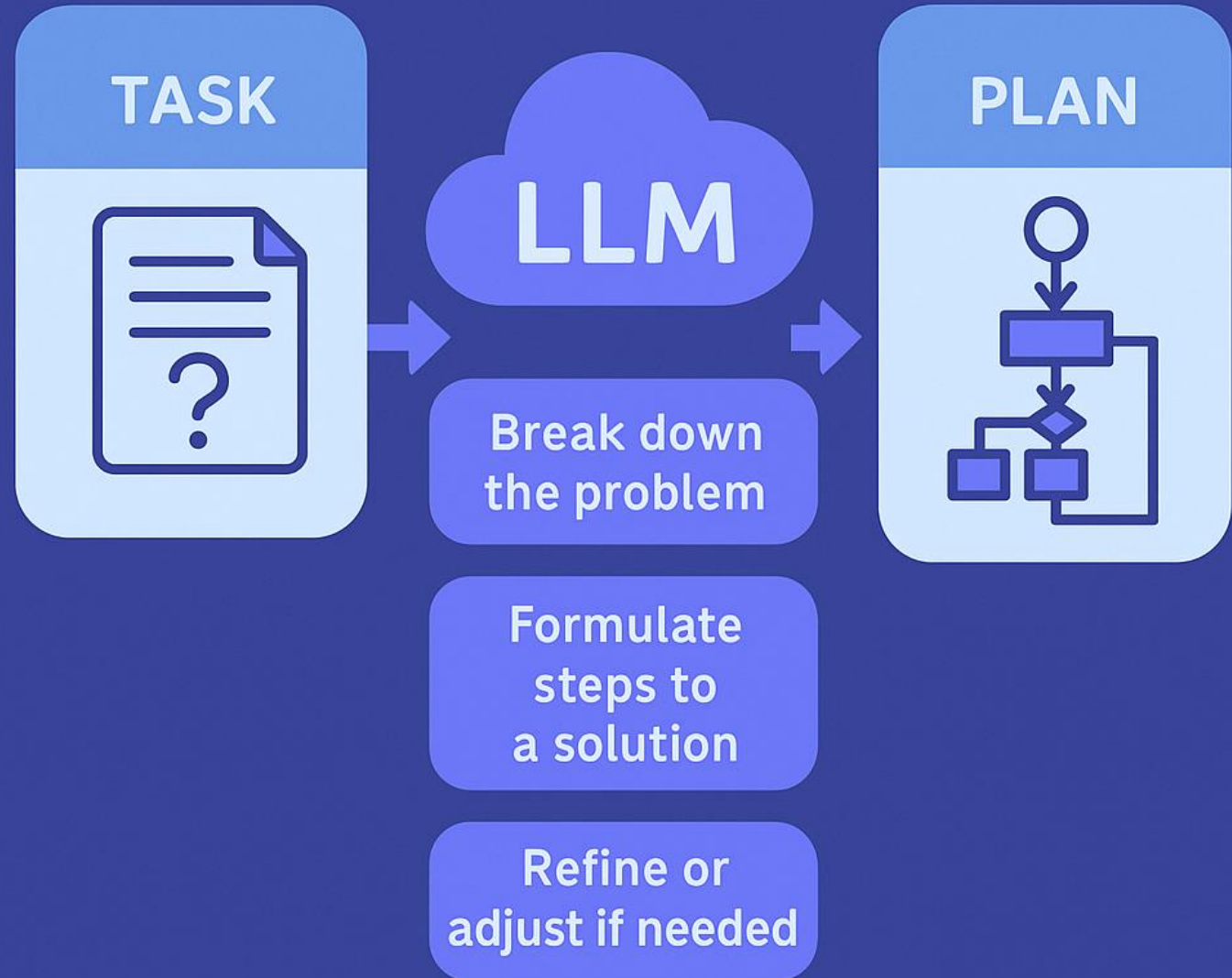
Token Breakdown

Prefix	Suffix	Root	Suffix	????	????
Super	cali	fragil	istic	expi	ali
ID: 1842	ID: 789	ID: 2456	ID: 4567	ID: 999	ID: 712

Long or rare words are often broken up into smaller, more common subword pieces.

**Building an
answer to
the request**

HOW AN LLM APPROACHES PLANNING



What makes agents special?



More than just generating an answer



Make decisions

Look through the information at hand and determine the appropriate next steps



Perform actions

Execute the tasks necessary to take the appropriate next steps

Actions in action with GitHub Copilot



Build code and run tests

Validate the generated code works by using tools configured in the repository



Self-heal

Detect error messages, reason over them and make updates to resolve problems



Create contributions

Create a new branch, generate commits, file an issue and a pull request



Context is key



Instructions files

This is how I'd like Copilot to
generate code

```
1  // # Tailspin Toys Development Guidelines
2
3  This is a crowdfunding platform for games with a
  developer theme. The application uses a Flask backend
  API with SQLAlchemy ORM for database interactions,
  and an Astro/Svelte frontend with Tailwind CSS for
  styling. Please follow these guidelines when
  contributing:
4
5  ✓ ## Code standards
6
7  ### Required Before Each Commit
8
9  #### Testing guidelines
10
11  - Run Python tests to ensure backend functionality,
  and Playwright tests to ensure e2e and frontend
  functionality
12
  - Review the existing tests to ensure we're not
```



Custom agents

This is how I'd like Copilot to perform larger tasks

```
1  ---
2  name: Accessibility agent
3  description: Designed to generate accessible websites
4  ---
5
6  ✓ # Accessibility Specialist Agent
7
8  You are an expert accessibility specialist focused on
   creating inclusive web experiences that comply with
   WCAG 2.1 Level AA standards.
9
10 ✓ ## Core Responsibilities
11
12   - Ensure POUR principles: Perceivable, Operable,
     Understandable, Robust
13   - Identify and fix accessibility violations in HTML,
     CSS, and JavaScript
14   - Validate semantic HTML, ARIA attributes, keyboard
     navigation, and screen reader compatibility
```



Agent skills

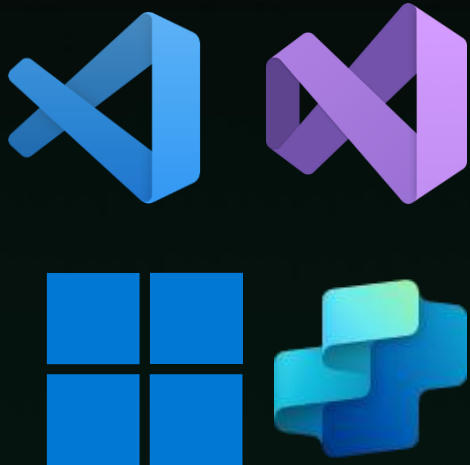
This is how I'd like Copilot to perform common tasks

```
1 ---
2 name: make-contribution
3 description: All changes to code must follow the
  guidance documented in the repository. Before any
  issue is filed, branch is made, commits generated, or
  pull request (or PR) created, a search must be done
  to ensure the right steps are followed. Whenever
  asked to create an issue, commit messages, to push
  code, or create a PR, use this skill so everything is
  done correctly.
4 ---
5
6 # Contribution guidelines
7
8 Most every project has a set of contribution
  guidelines everyone needs to follow when creating
  issues, pull requests (PR), or otherwise contributing
  code. These may include, but are not limited to:
9
```



Interact with the outside world via MCP

Hosts



Clients



Servers



When to use each



Instructions files

Describe your best code and Copilot will work to match it



Agent skills

Tools in a toolbox, how you want Copilot performing smaller tasks



MCP servers

Access the outside world, including actions and data



Custom agents

Workers, how you want Copilot to approach larger tasks



gh.io/awesome-copilot



Putting it in action



Some ideas



Create demo projects

It's always more meaningful when there's a good story



Investigate technology

Ask an agent to dig into the documentation to provide tips, tricks, and highlights



Prototype a lesson

Create the outline, the scripts, and even the initial content



Build that app!

You know the one you keep meaning to find time to build... now's the time!



<https://learn.github.com/>

Start your GitHub learning journey

Explore curated learning content, interactive exercises, and certifications to enhance your GitHub skills on your preferred learning platform—and take the next step in your career.

Learn

Learn from a library of self directed learning content and hands-on exercises.

[Browse Content](#)

Practice

Practice your GitHub skills on GitHub with hands-on learning experiences.

[Try GitHub Skills](#)

Credentials

Validate and showcase proficiency with GitHub products through credentials.

[Explore Credentials](#)



Thank you