Programming with GitHub Copilot

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Purpose: learn about GitHub Copilot

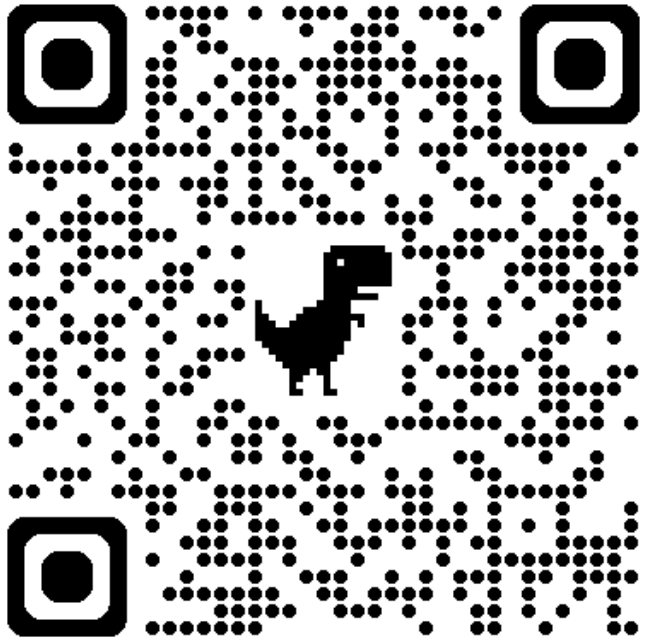
- What is it
- Why
  - to use it
  - not to use it
- How
  - to get it
  - to use it

Audience: anyone who codes

- Novice, intermediate or advanced
- Any language, focused on Python
- Many editors, focused on Visual Studio Code
- Here for
  - Personal enrichment
  - Possible UVA IRB-SBS 7557 eligibility
  - Both

UVA IRB-SBS 7557 (PI: Sara Riggs)

- Study on human-AI v. human-human teams
- Two paid sessions @ $7 per half hour
- More information at https://7557.gardella.cc/
- Scan for link:



https://7557.gardella.cc/workshop/materials

Outline

Background
Access
Benefits
Risks
Alternatives
Tutorial

Background
Access
Benefits
Risks
Alternatives
Tutorial

AI is good with code

- GenAI is good at predicting what
- GenAI is good at predicting what comes next
- for i in range(10
- for i in range(10):

Background
Access
Benefits
Risks
Alternatives
Tutorial

Systems Engineering: define goals

1. Solve real world problems with code
2. ↑ Speed & Quality
3. ↑ Programmer well-being
4. ↓ Bad externalities

Background
Access
Benefits
Risks
Alternatives
Tutorial

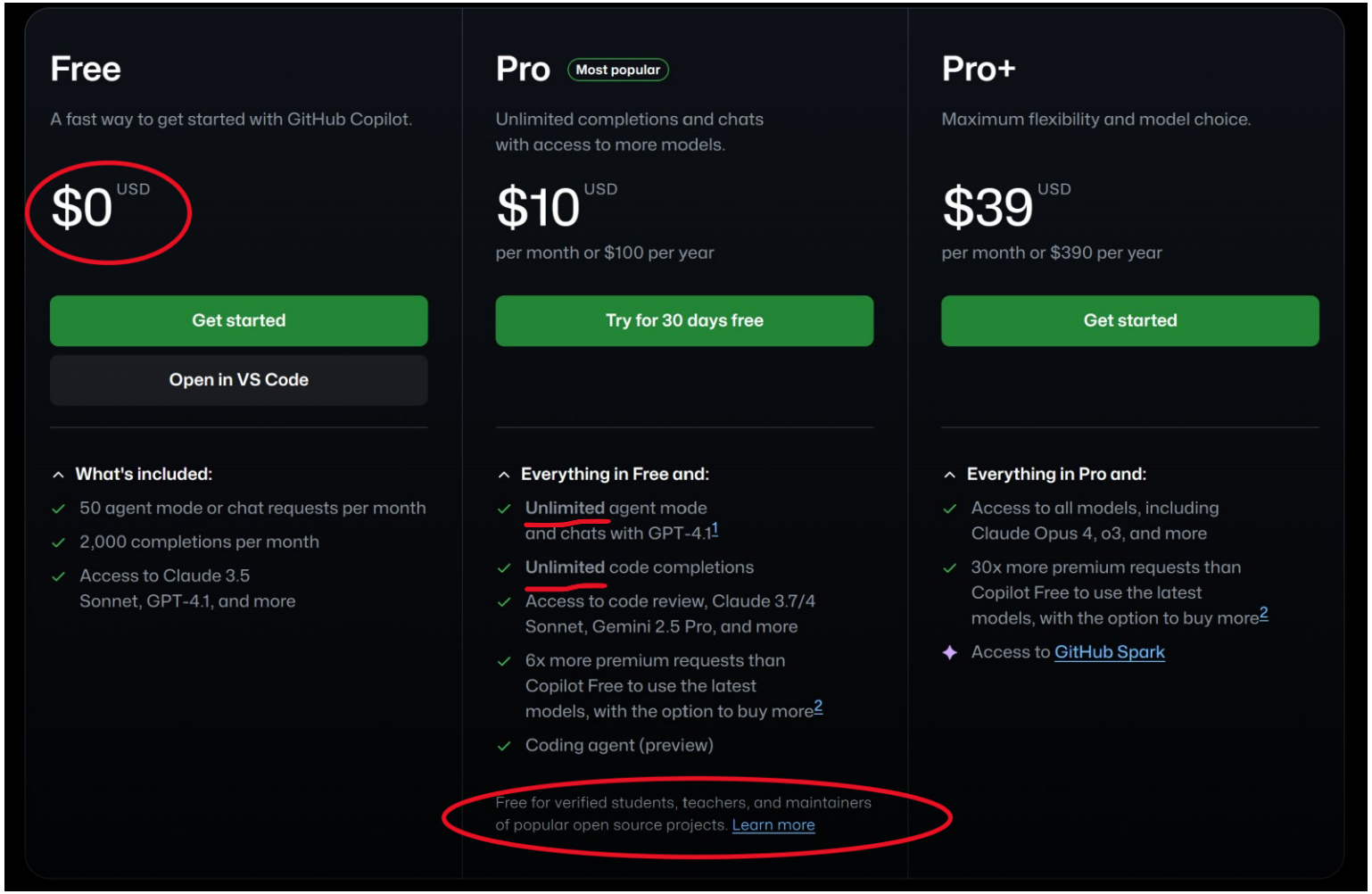
Positionality Statement

- Trust me so we can get to the fun part
- You should use AI to code
- ChatGPT is not enough
- You should stay involved
- Customization is key

Background
Access
Benefits
Risks
Alternatives
Tutorial

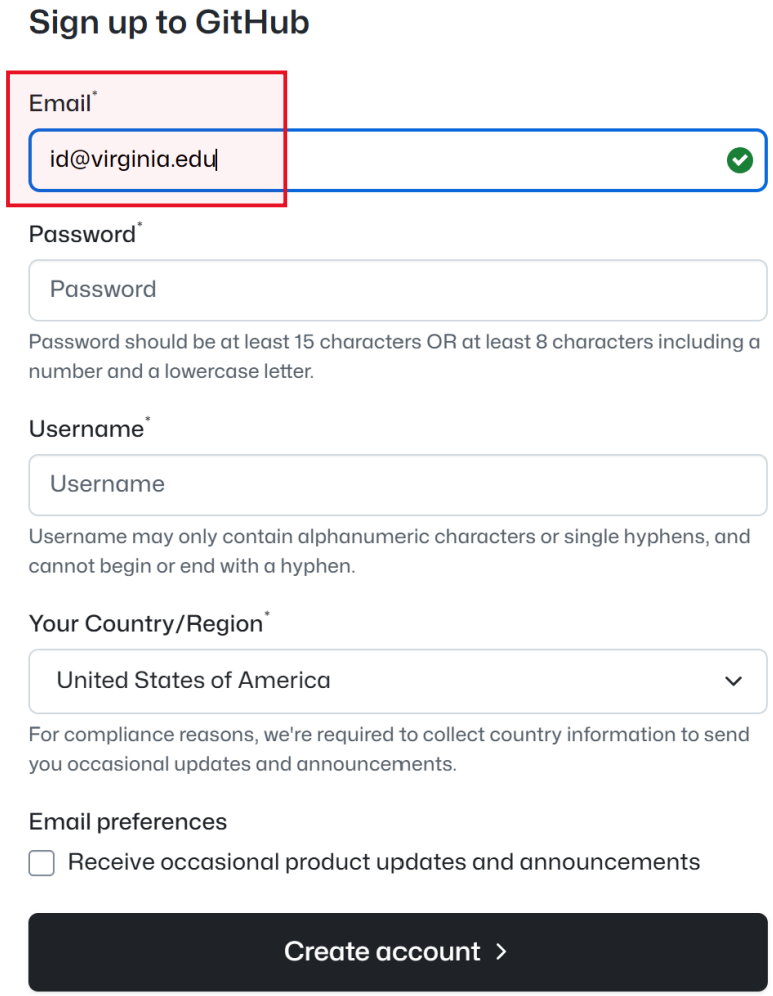
Background
Access
Benefits
Risks
Alternatives
Tutorial

Copilot is probably free to you!



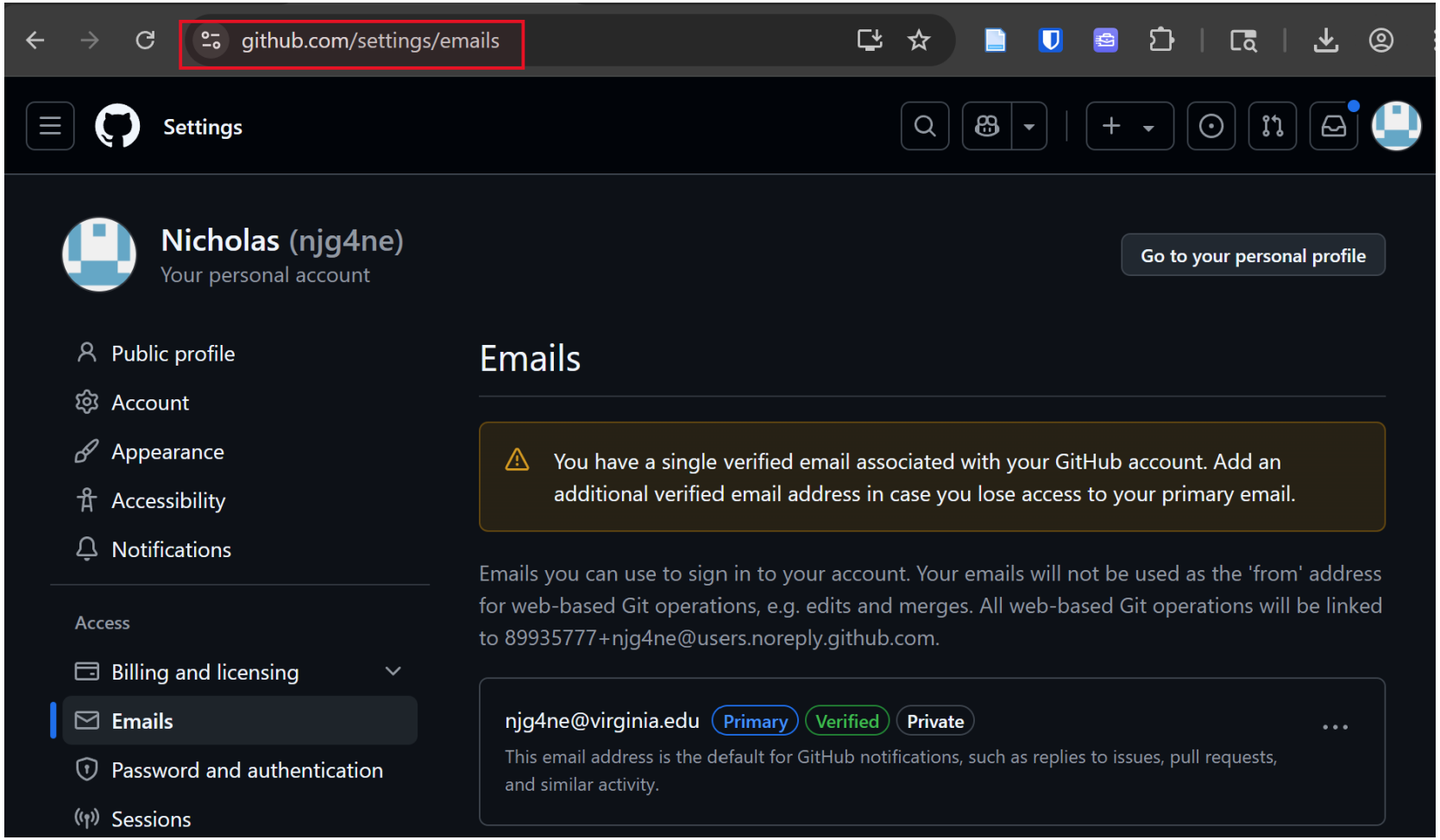
Background
Access
Benefits
Risks
Alternatives
Tutorial

1) Have a GitHub account



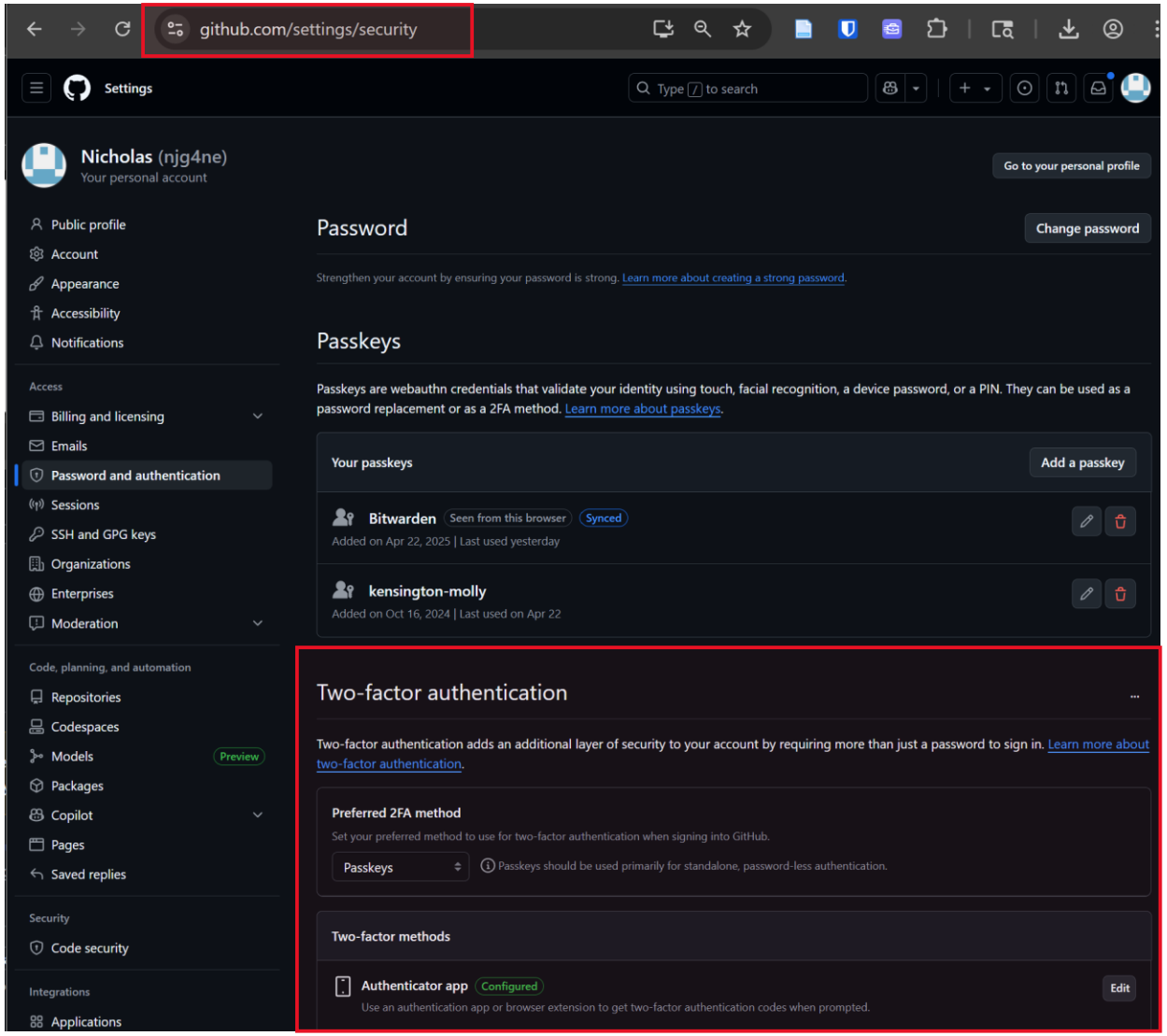
Background
Access
Benefits
Risks
Alternatives
Tutorial

2) Associate & verify .edu email



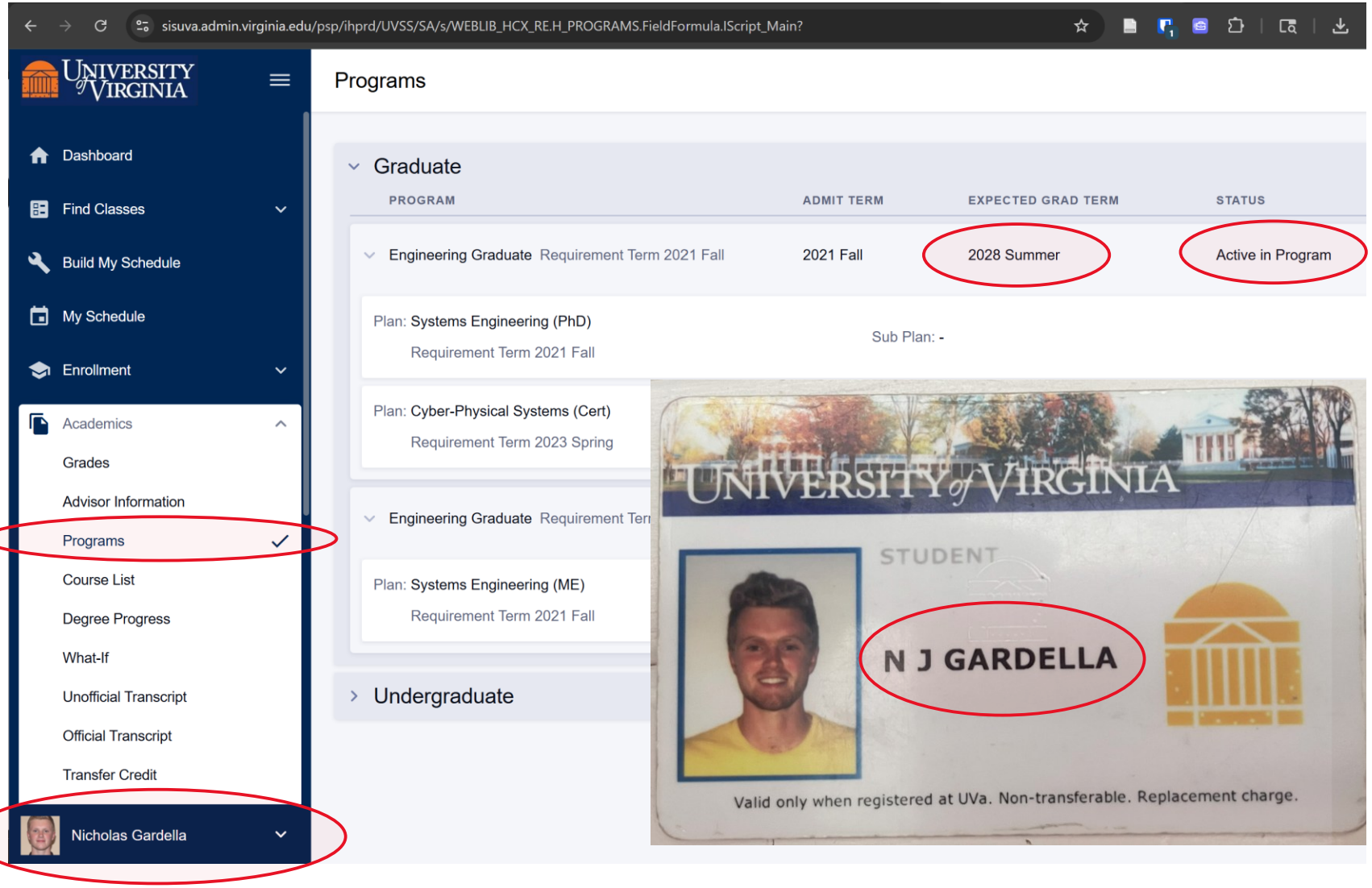
Background
Access
Benefits
Risks
Alternatives
Tutorial

3) Setup 2FA



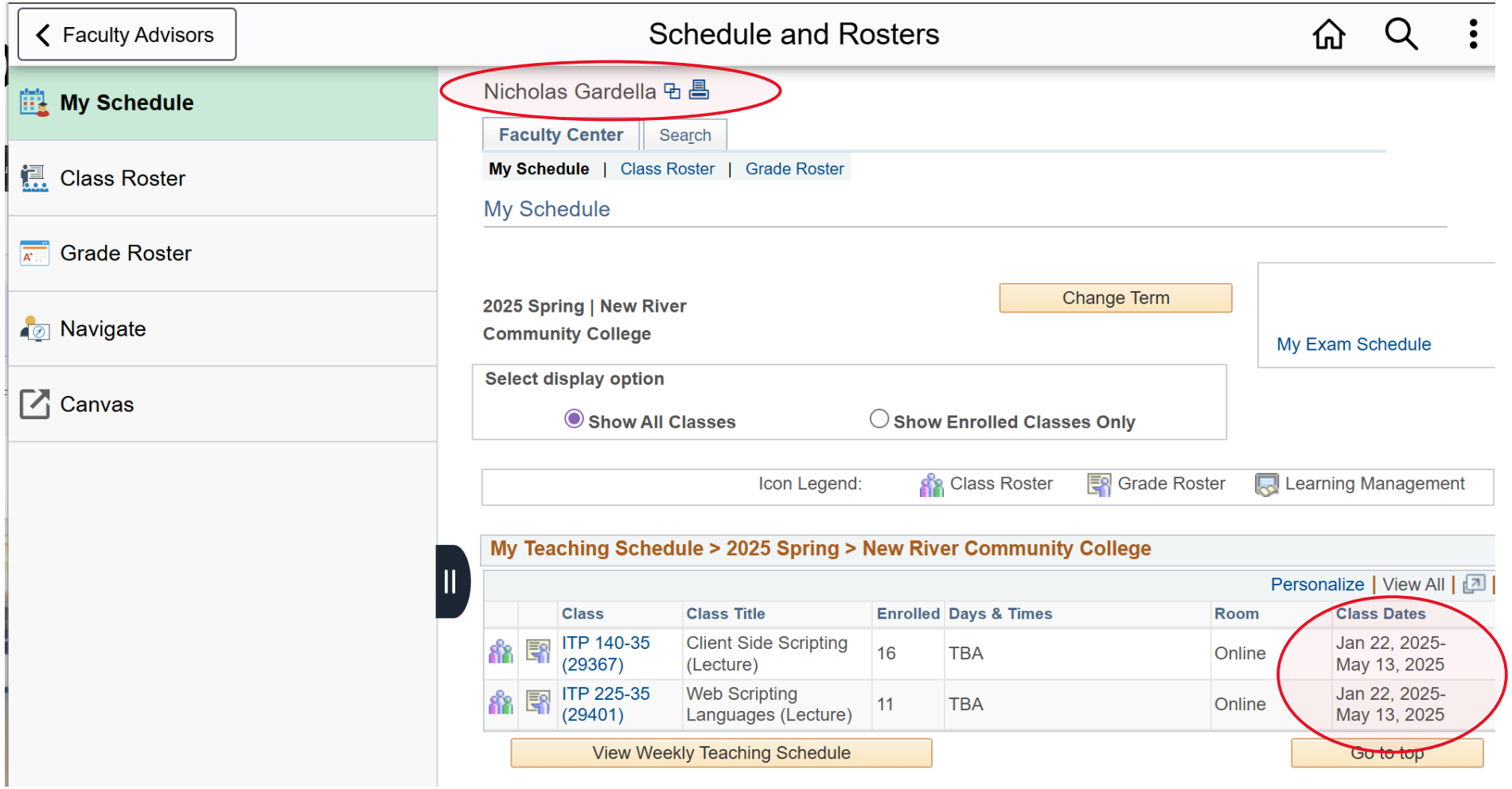
Background
Access
Benefits
Risks
Alternatives
Tutorial

4a) Prepare dated proof (student)



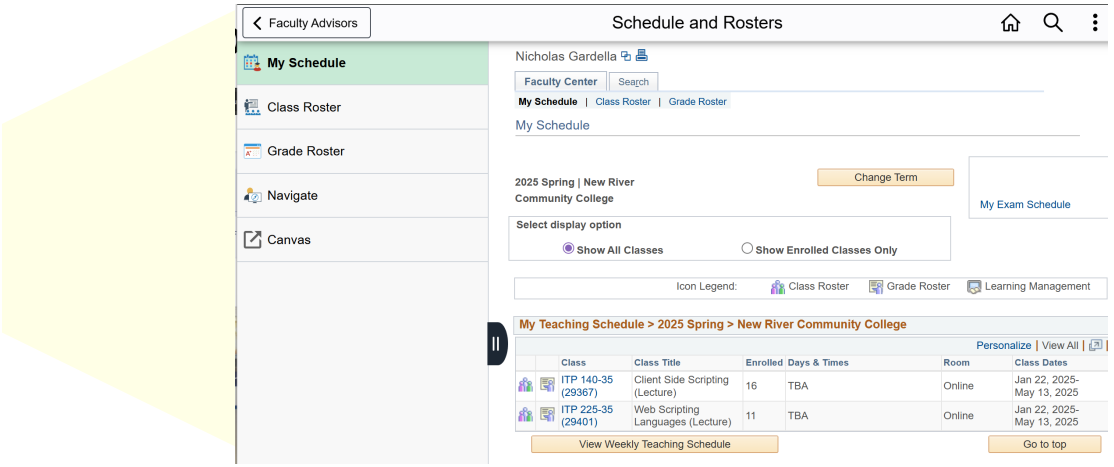
Background
Access
Benefits
Risks
Alternatives
Tutorial

4b) Prepare dated proof (teacher)



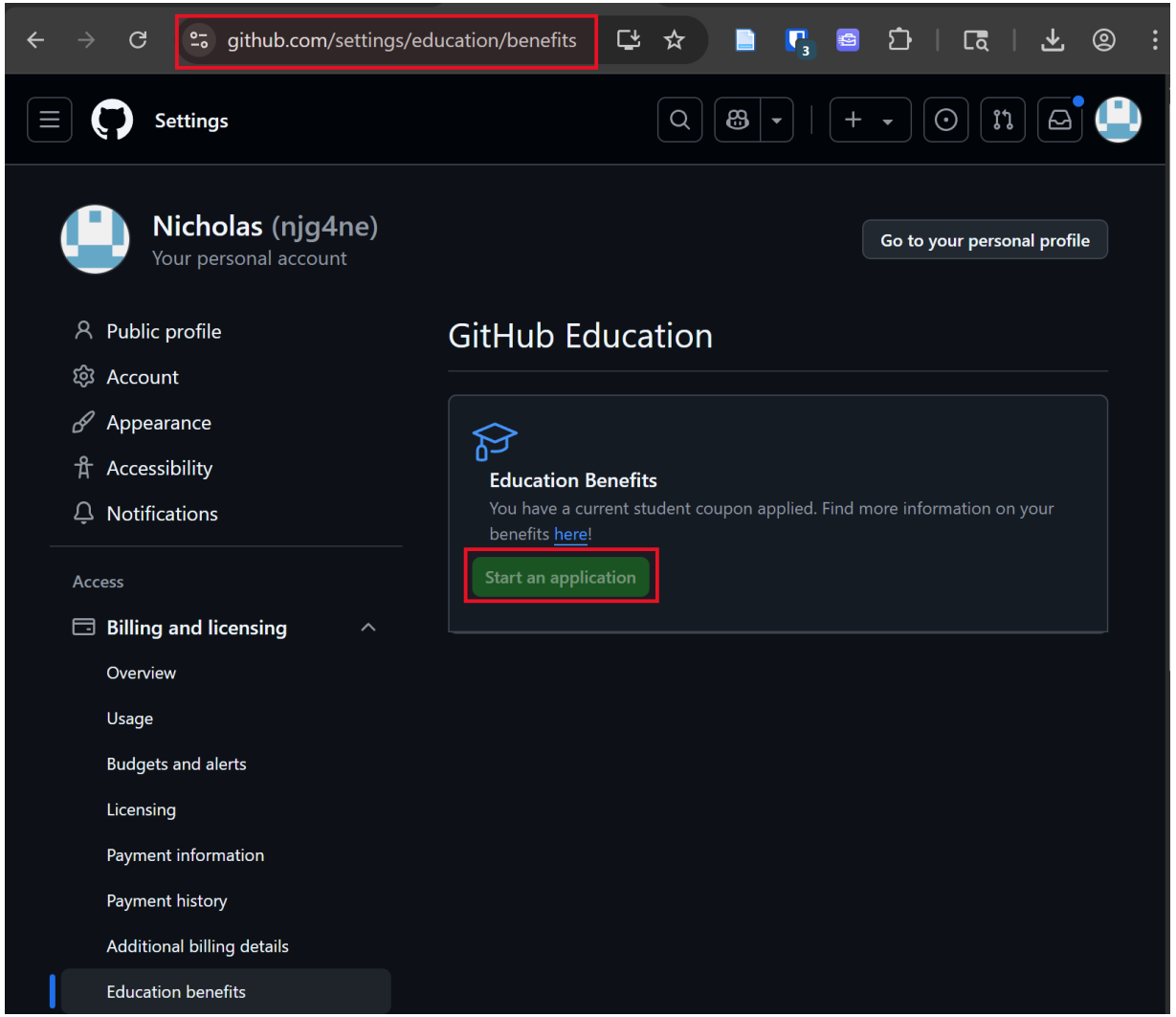
Background
Access
Benefits
Risks
Alternatives
Tutorial

5) Ready a webcam or phone



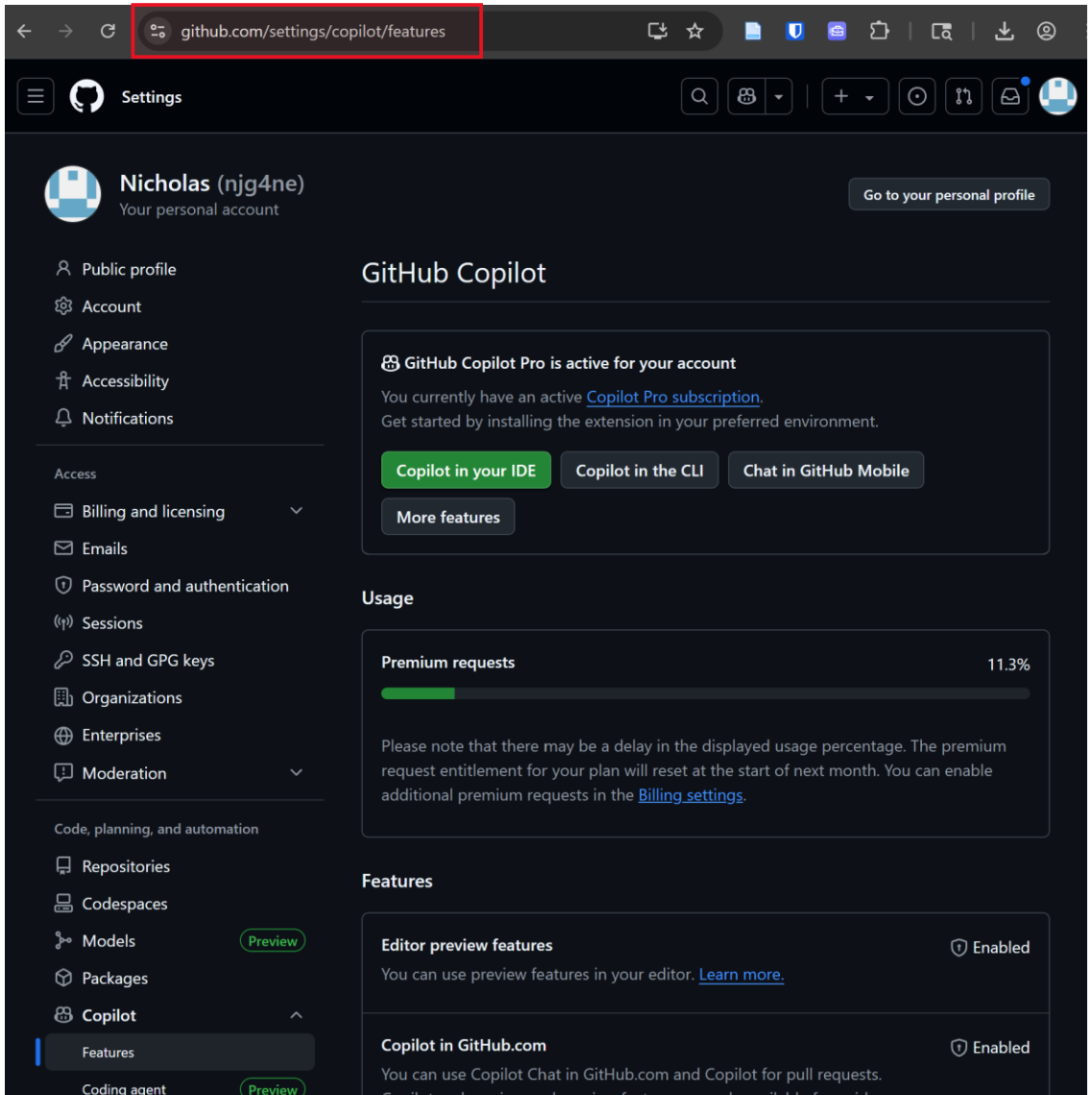
Background
Access
Benefits
Risks
Alternatives
Tutorial

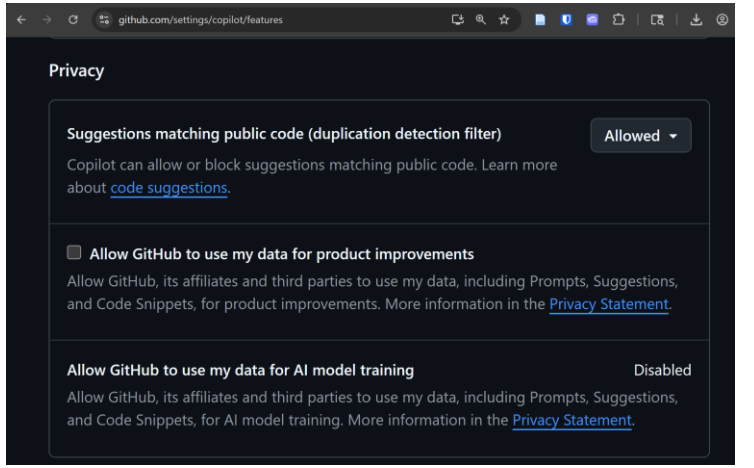
6) Apply for discount & wait



Background
Access
Benefits
Risks
Alternatives
Tutorial

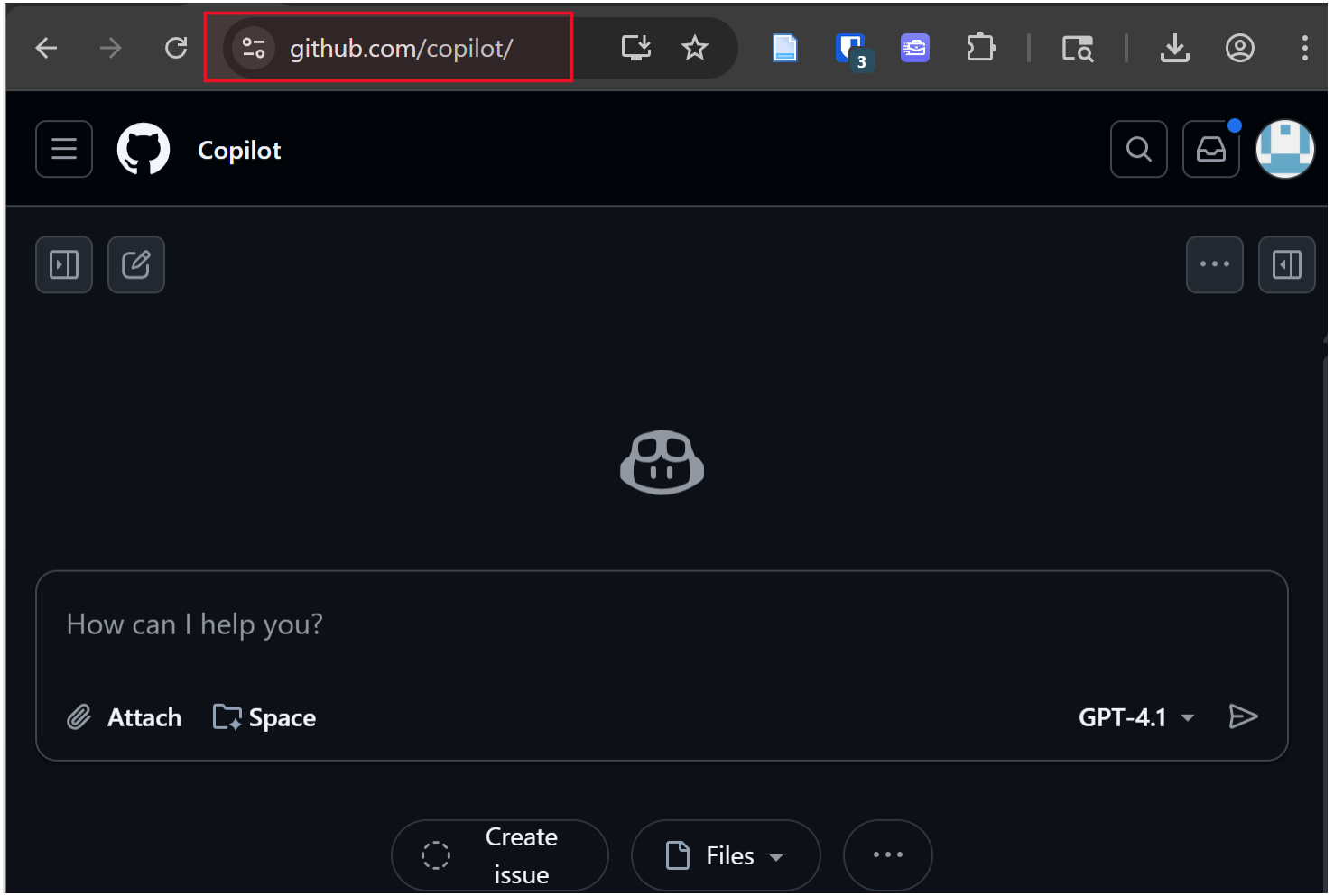
7) Enable & configure Copilot





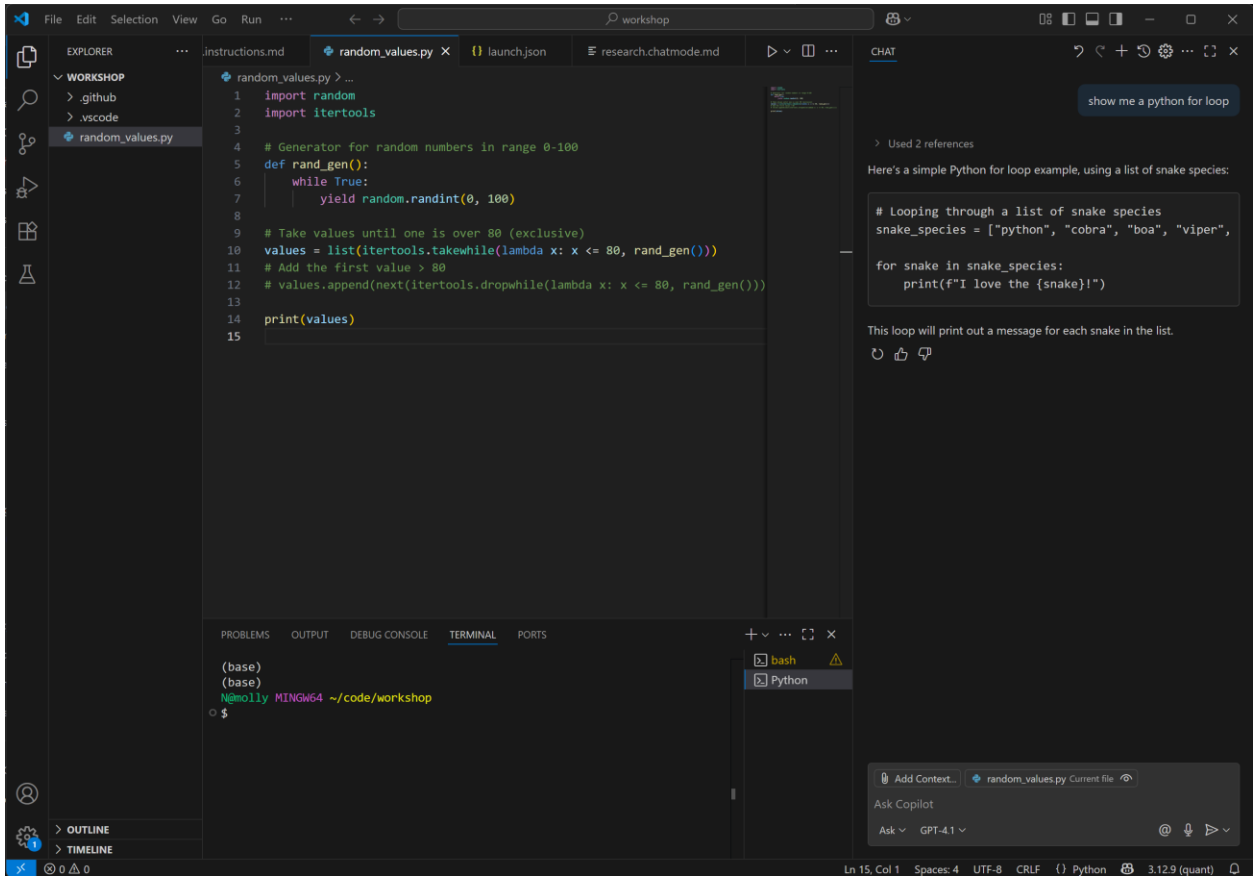
- Background
- Access
- Benefits
- Risks
- Alternatives
- Tutorial

8a) Use: web or mobile



Background
Access
Benefits
Risks
Alternatives
Tutorial

8b) Use: in-IDE



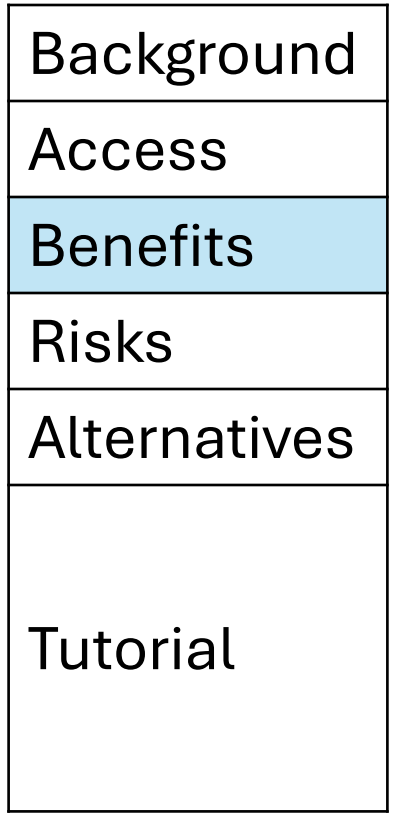
VS Code

eclipse

Xcode

JET BRAINS

Background
Access
Benefits
Risks
Alternatives
Tutorial


Background
Access
Benefits
Risks
Alternatives
Tutorial

Background
Access
Benefits
Risks
Alternatives
Tutorial

Using ChatGPT to code but not Copilot? You are missing out.

AI is better than you.

GPT-4.1

1,047,576 token context window

Background
Access
Benefits
Risks
Alternatives
Tutorial

Copilot is more than chat.

- Inline suggestions
- Interactive editing
- Action-taking
- More features all the time
- Context-specificity

Background
Access
Benefits
Risks
Alternatives
Tutorial

Copilot is great at what is most likely.

- What code comes next
- What edit comes next
- What answer fits your question
- What action is most likely to be needed
- What rules probably apply to some code

Background
Access
Benefits
Risks
Alternatives
Tutorial

Background
Access
Benefits
Risks
Alternatives
Tutorial

Copilot is not a flawless expert.

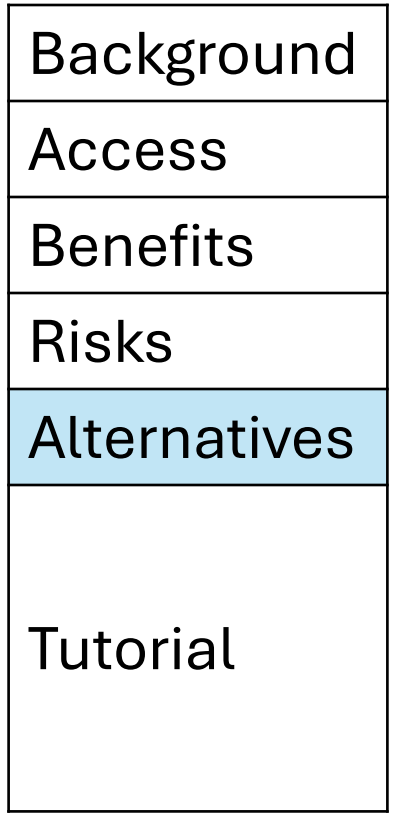
- Innovation is not predictable
- Most likely does not mean best
- Randomness causes mistakes
- Training data can be wrong or outdated
- Correctness may be subjective
- “Garbage in, garbage out”

Background
Access
Benefits
Risks
Alternatives
Tutorial

Copilot doesn’t know what you want.

- You must share your goals
- You must scope context
- You must make rules
- You must give tools

Background
Access
Benefits
Risks
Alternatives
Tutorial


Background
Access
Benefits
Risks
Alternatives
Tutorial

Alternatives exist.

Background
Access
Benefits
Risks
Alternatives
Tutorial

Self-hosting is an option.

Ollama ⟶ easy private LLMs

Continue ⟶ use Ollama in-IDE

Background
Access
Benefits
Risks
Alternatives
Tutorial

Background
Access
Benefits
Risks
Alternatives
Tutorial

Let’s use Copilot!

Background
Access
Benefits
Risks
Alternatives
Tutorial