

Cybersecurity-inspired technology projects

Justin Cavanaugh



Introduction

This presentation “tells the story” of a series of projects that began when I enrolled in Google’s Cybersecurity Professional Certificate program.

Completing the program led me to take an unexpected journey that ended up going well beyond the skills and concepts presented within the program itself.

These projects illustrate not only my ability to apply what I have learned, but also my sense of curiosity.

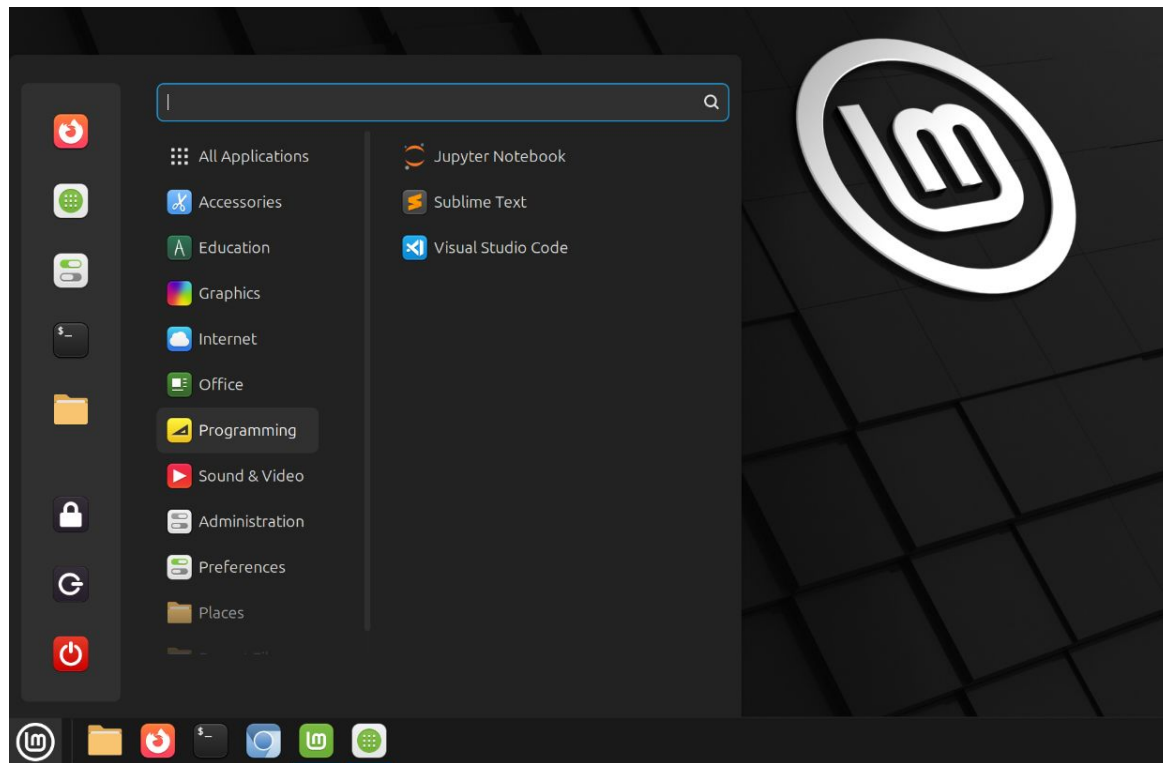
Certification

— — —

The 8-course program was fascinating and challenging. I gained hands-on experience with several technologies including Linux, SQL and Python, as well as a range of network security concepts.



Converting my laptop to Linux



During the program, I began researching ways to practice the skills I was learning, including several Linux operating systems.

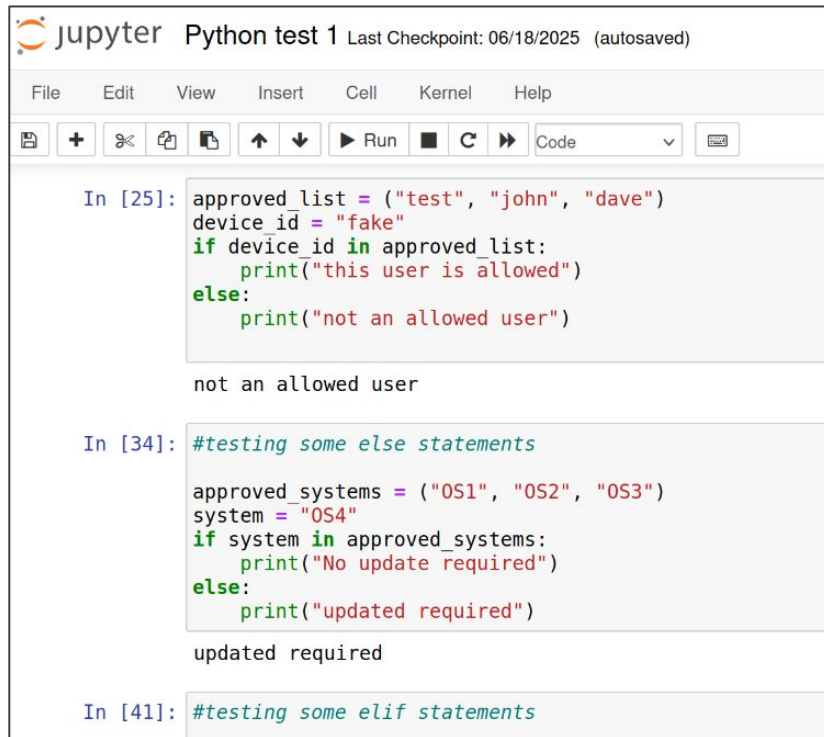
Before I'd finished the program, I converted one of my older laptops to Linux and began installing many of the applications I was learning about in the certificate program.

Installing new applications on my Linux laptop

I wanted to be able to practice and apply cybersecurity-related skills and concepts outside the courses.

The applications I installed included Wireshark, Suricata, tcpdump, MySQL, Visual Studio and Jupyter notebook.

While practicing skills such as writing Python code, I found I very much enjoyed writing my own code!



The screenshot shows a Jupyter Notebook window titled "Python test 1" with a last checkpoint of "06/18/2025 (autosaved)". The interface includes a menu bar (File, Edit, View, Insert, Cell, Kernel, Help) and a toolbar with icons for saving, adding, zooming, copying, pasting, undo, redo, running, and code completion. The notebook contains three input cells:

```
In [25]: approved_list = ("test", "john", "dave")
         device_id = "fake"
         if device_id in approved_list:
             print("this user is allowed")
         else:
             print("not an allowed user")
```

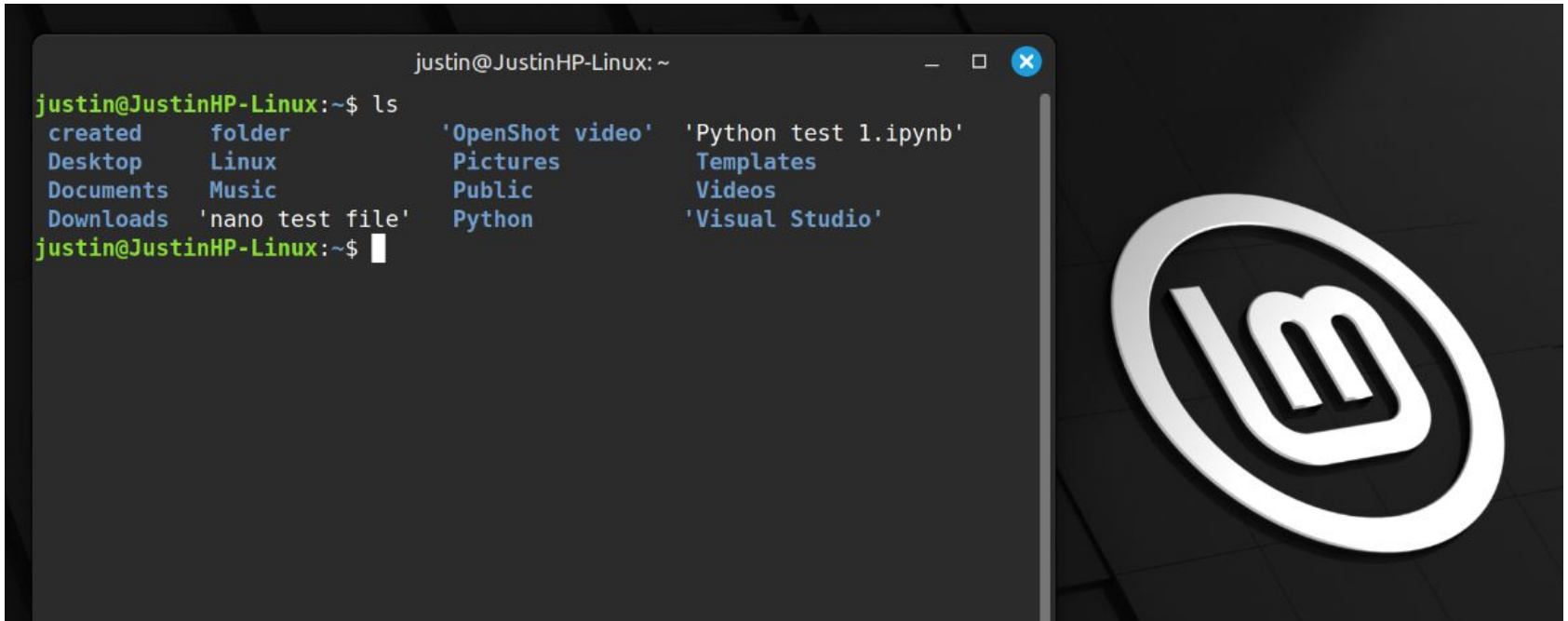
not an allowed user

```
In [34]: #testing some else statements

         approved_systems = ("0S1", "0S2", "0S3")
         system = "0S4"
         if system in approved_systems:
             print("No update required")
         else:
             print("updated required")
```

updated required

```
In [41]: #testing some elif statements
```

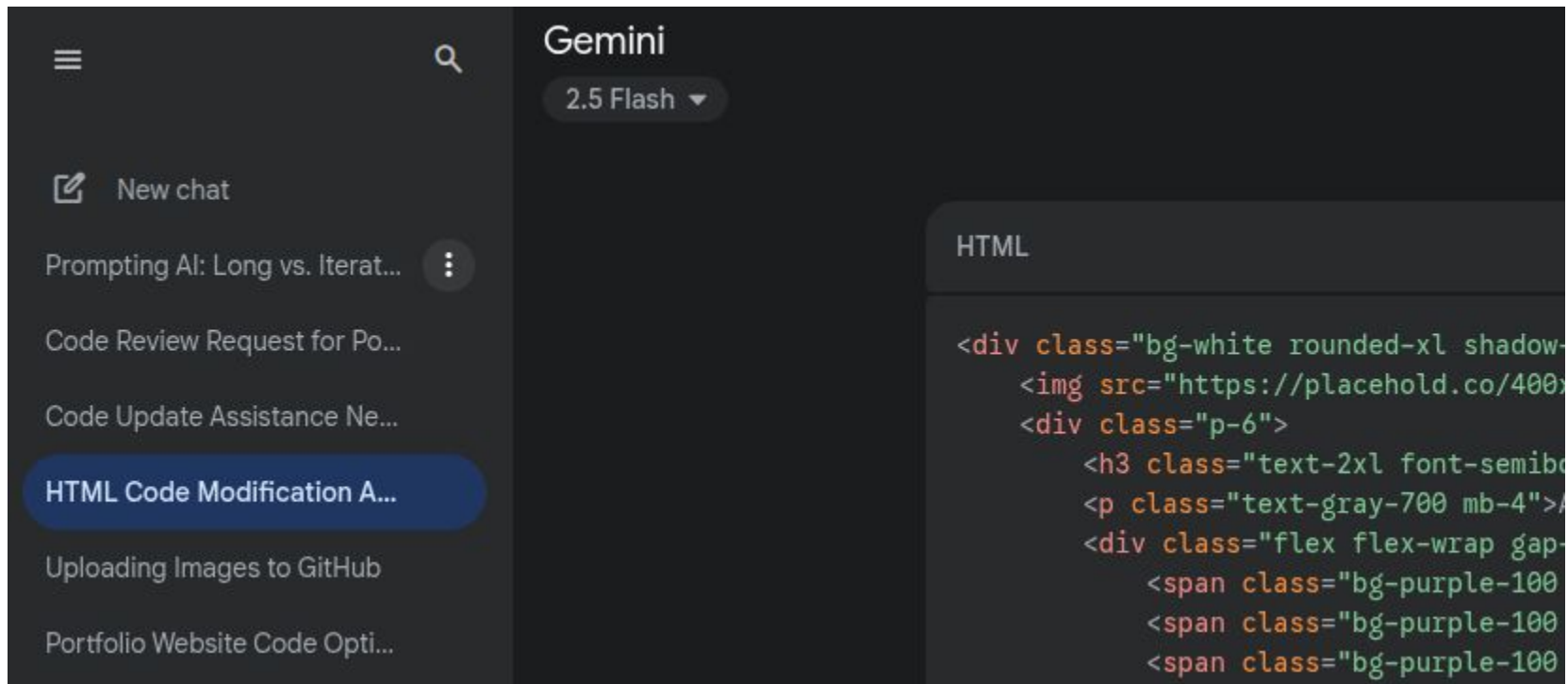


I wanted to continue to practice what I'd learned about the command line interface on my Linux laptop. I began to create resources and environments approximating what I'd used in the program.

Beyond the Cybersecurity program

The Cybersecurity courses inspired me to explore a number of additional topics and resources *outside* the program. For example, I completed an additional AI-related certification course from Google.

This led me to experimenting with how to make more effective use of AI at work and also in several personal projects.



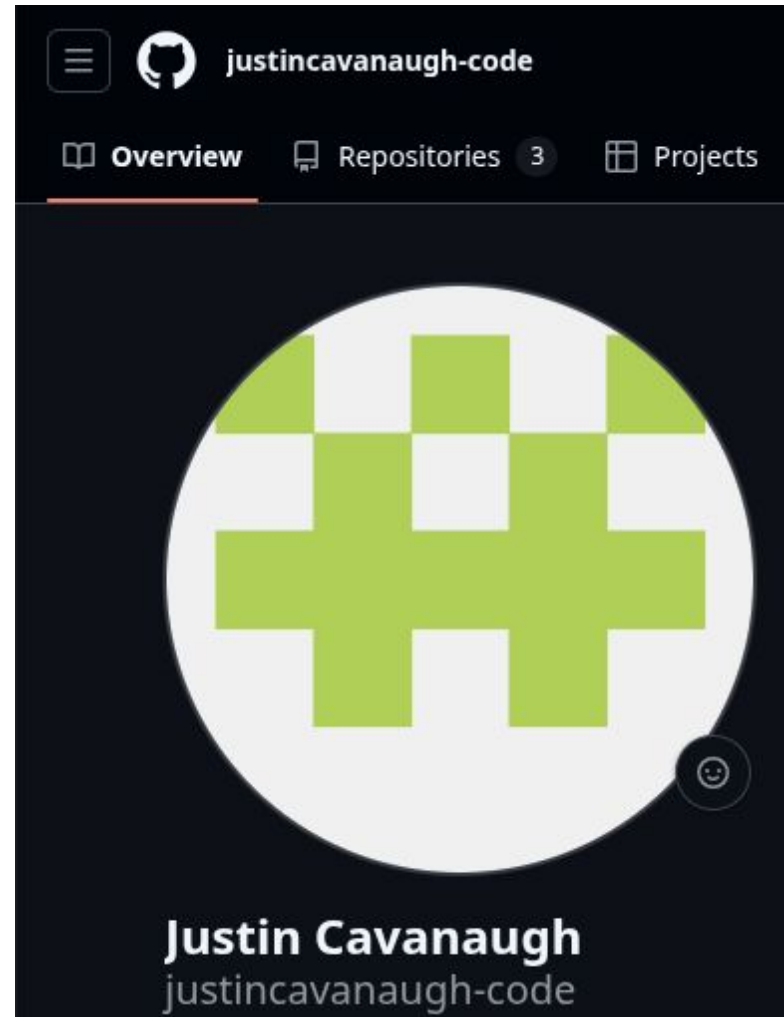
What I had learned in cybersecurity program and the AI course inspired me to rebuild my professional portfolio website. With some help from Gemini, I was able to code a new portfolio site much more quickly than I'd expected. This was the first website I had built from scratch.

Publishing my website

Next I wanted to publish my portfolio without being reliant on a resource like Wix, which I'd used previously.

After learning more about GitHub in the cybersecurity program, I created an account. I found that I was able to publish my new website in a matter of minutes.

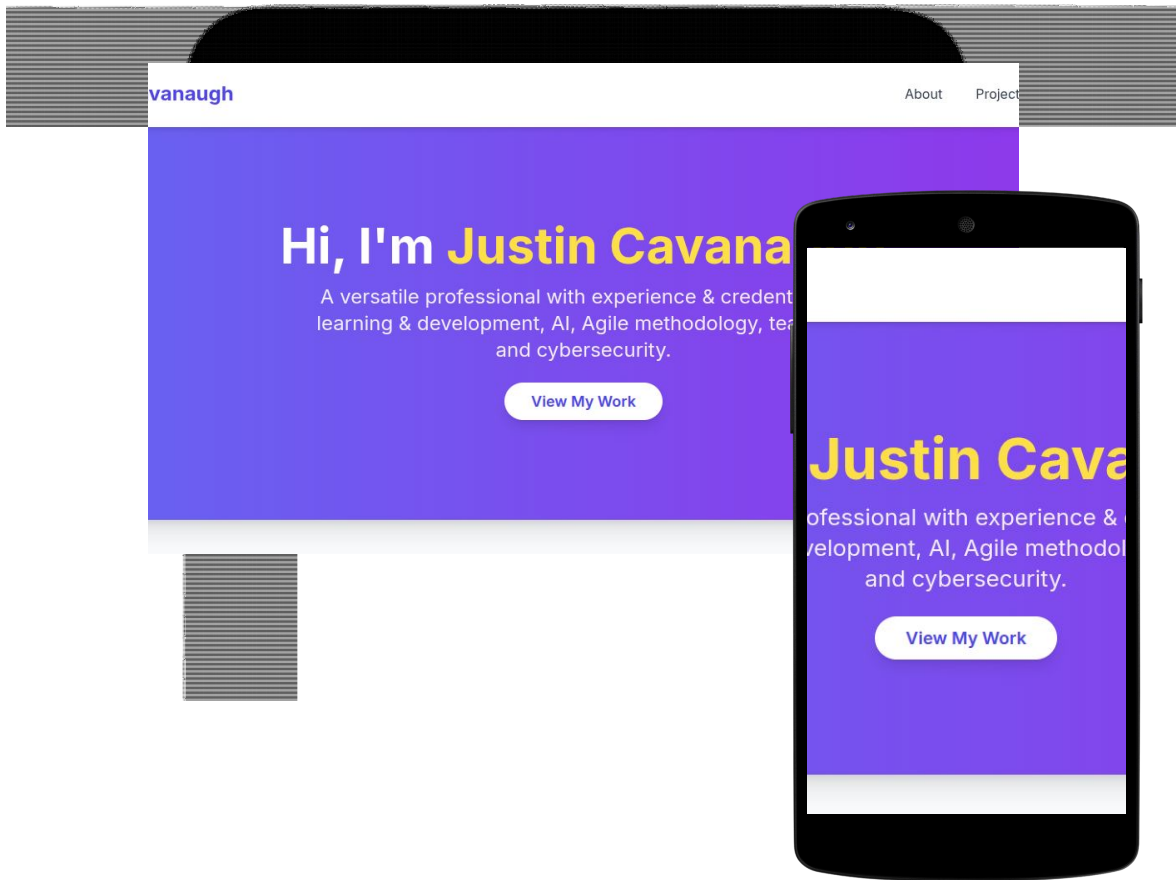
In doing so, I embraced an Agile approach; my initial website was an imperfect proof of concept. However, subsequent iterations led to a design that I am quite proud of.



My new website

— — —

Combining what I learned from several sources, I coded and published a new professional portfolio website, which is probably where you are viewing this presentation.



Conclusion and what's next



Completing the cybersecurity certificate program ultimately led me to convert a laptop to Linux, install several new programs, earn an additional AI-related certificate and experiment with ways to write & publish my own code.

I am proud of these projects largely because many of the underlying concepts were unfamiliar or unknown to me when I started the program.

I'm excited to continue to try new things, iterate and explore new concepts & challenges!