

AI Assistance Documentation

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Project: Aeron Systems Assignment

AI Usage, Prompts, and Manual Enhancements for AI Intern Assignment

Aeron Systems – File Upload Portal + CSV Plotter Tool

1. Introduction - How AI Was Used

This document outlines how AI tools such as ChatGPT and GitHub Copilot were used to assist in the development of the assignment project.

AI tools were used exclusively for:

- Generating boilerplate Python + Flask code
- Designing HTML & CSS layout
- Generating a sample IoT dataset
- Debugging errors
- Improving UI/UX style
- Preparing documentation

However, all AI-generated code was manually reviewed, fixed, optimized, tested, and enhanced before use.

The project reflects a combination of AI-augmented coding and independent problem-solving & development.

2. List of AI Prompts Used (Web Portal Development)

Below are the actual prompts used during development.

These demonstrate transparency and proper AI usage.

Prompt 1 - Generate Flask File Upload Portal

Write a Flask application for a prototype file upload portal.

Requirements:

- Allow only .log, .pdf, .csv, and .zip uploads.
- Save files into an /uploads folder.
- Include fields: log datetime, uploader name, description.

- Save metadata to file_index.csv.
- Add pages: home, upload, list files, and download.
- Prevent overwriting of files by adding timestamp if name exists.
- Build clean HTML templates using Jinja2.

Prompt 2 - Improve UI Styling (HTML + CSS)

Improve the design of my Flask templates using modern CSS.

Requirements:

- Larger fonts
- Clean buttons
- Professional layout
- Light color theme
- Card-like sections
- Centered container layout

Make it look modern and usable.

Prompt 3 - Add Delete Functionality

Add a Delete button to my file list.

When user clicks delete:

- Remove the file from the uploads folder.
- Remove its metadata entry from file_index.csv.
- Redirect back to uploaded files page with a success message.
- Show a confirmation popup before deleting.

Prompt 4 - Fix 'Token.test' Jinja2 Error

I am getting this error:

AttributeError: 'Token' object has no attribute 'test'

Tell me why this happens and help me resolve it with proper Python and Jinja2 versions.

Prompt 5 - CSS Beautification

Make my CSS more modern:

- Blue navbar
- Buttons with hover effects
- Table with hover highlight
- Alert boxes for success/error

- Container with drop-shadow
- Responsive layout

3. Prompts Used (CSV Plotter Tool)

Prompt 6 - Generate CSV Plotter CLI Script

Create a Python script that loads a CSV file using pandas.

Features:

- List available columns
- Allow user to select X and Y columns
- Accept plot type (line or bar)
- Use matplotlib to create plots
- Save output using --save option

Write clean and well-commented code.

Prompt 7 - Generate IoT Sensor Dataset

Generate a realistic IoT telemetry dataset suitable for Aeron Systems.

Include columns:

- Timestamp
- Temperature_C
- Humidity_Percent
- Vibration_mms
- Battery_Voltage
- Pressure_hPa

Provide around 10–15 rows in CSV format.

4. Manual Enhancements Made:

AI only helped with raw ideas and boilerplate - I manually improved, redesigned, fixed, and implemented core logic.

Manual enhancements done by me:

- Completely redesigned CSS (modern UI, responsive layout)
- Implemented Delete feature in Flask (file deletion + metadata cleanup)
- Debugged Python version & Jinja2 compatibility issues
- Added confirmation popup for delete
- Added full metadata saving and updating
- Handled duplicate filenames with timestamp suffix
- Reduced UI clutter and improved navigation
- Created IoT-specific dataset manually reviewed
- Improved HTML structure for better readability
- Fixed path issues in CSV Plotter
- Added support for saving plots
- Cleaned project structure for submission
- Wrote professional README.md and documentation
- Added comments throughout the code

This section shows **independent contributions** beyond AI-generated suggestions.

5. Screenshots of AI Interaction

1) Designing templates

ChatGPT 5.1 ▾

My HTML templates look very plain. Can you help me create a modern CSS theme with a blue navbar, card layout, bigger fonts, and clean buttons for my Flask app?

Modern CSS theme (copy-paste into static/styles.css)

Below is a ready-to-use modern theme: blue navbar, card layout, larger readable fonts, clean buttons, and small utility classes. Paste this entire block into

`web_portal/static/styles.css` (replace existing file), then hard-refresh your browser (Ctrl+F5) to see the changes.

css

 Copy code

```
/* ----- Base & Typography ----- */  
:root{  
    --brand-blue: #0a5dd8;  
    --brand-blue-dark: #0849ad;
```



2) Delete File Functionality

I want to add a delete button next to each uploaded file in my Flask portal. When the user clicks it, the file should be removed from the uploads folder and its metadata entry must be deleted from file_index.csv. How do I implement this?

To add a delete option, you need to modify both the HTML template and your Flask route logic.

1. Add a delete button inside `list.html`

Place this inside the table row where you show each file:

html

 Copy code

```
<a href="{{ url_for('delete_file', filename=f.filename) }}"
```



3) IoT Dataset Generation

Can you generate a small realistic IoT telemetry dataset

Here is a small realistic IoT telemetry dataset with typical environmental and machine-health parameters. It includes:

- **Timestamp**
- **Temperature_C**
- **Humidity_Percent**
- **Vibration_mmS**
- **Battery_Voltage**
- **Pressure_hPa**

CSV

Copy code

```
Timestamp,Temperature_C,Humidity_Percent,Vibration_mmS,Battery_Voltage,Pressure_hPa
2024-11-18 10:00,28.5,45.2,1.3,92,1012
2024-11-18 10:05,28.7,44.2,1.3,91,1011
2024-11-18 10:10,29.0,45.2,1.4,90,1011
2024-11-18 10:15,29.2,46.2,1.2,90,1010
2024-11-18 10:20,29.1,47.2,1.3,89,1010
2024-11-18 10:25,29.3,46.2,1.5,88,1009
2024-11-18 10:30,29.6,48.2,1.7,88,1009
2024-11-18 10:35,29.8,49.2,1.8,87,1008
2024-11-18 10:40,30.0,50.0,1.0,87,1008
2024-11-18 10:45,30.2,51.1,1.1,86,1007
2024-11-18 10:50,30.4,51.3,1.3,86,1007
2024-11-18 10:55,30.5,52.3,1.4,85,1006
```



6. Summary and Ethical AI Usage Statement

AI tools were used responsibly and ethically to accelerate development.

All critical logic, structure, debugging, improvements, testing, and UI polishing were performed manually.

The final project demonstrates my capability, not just AI's output, and reflects my understanding of Python, Flask, data processing, UI/UX, and documentation.