

**MOVIE RECOMMENDATION SYSTEM RUN  
INSTRUCTIONS (AI/HCI PROJECT)**

**PROJECT: AI/HCI Movie Recommendation System  
(Collaborative Filtering using SVD)**

**LANGUAGE/FRAMEWORK: Python 3.11+ / Streamlit /  
scikit-surprise**

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**Instructions to execute**

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**1. Environment Setup**

This application was developed and tested using Python 3.11. Please ensure to have a compatible Python installation (3.8+) before proceeding.

1.1 Open your terminal and navigate to the project root folder (the folder containing recommender\_app.py).

1.2 Activate the virtual environment (if using one).

1.3 Install Required Libraries: This step is MANDATORY and must be executed exactly as written to resolve library compatibility issues (especially NumPy).

pip install streamlit scikit-surprise pandas numpy==1.26.4

**2. Running the Application**

2.1 Execute the Streamlit command from the active environment in the project root:

streamlit run recommender\_app.py

**2.2 Initial Run - Data Download Prompt (CRITICAL):**

On the very first run, the surprise library attempts to download the MovieLens 100k dataset. The terminal will pause and ask for confirmation:

Trying to download dataset from...

...

Do you want to download and extract the ml-100k dataset?  
[Y/n]

Action: Type Y and press Enter to proceed with the download.

- \* Model Training:

After the data is downloaded, the application will display a status message in the browser console/web page: "Training SVD model on the MovieLens 100k dataset...".

This process takes approximately 30-60 seconds to complete.

- \* Application Launch:

Once training is complete, the Streamlit application will fully launch in your web browser (typically <http://localhost:8501>).

### **3. Application Use (HCI Features)**

- \* Select a User ID: Use the dropdown menu in the sidebar to select the target user.
- \* Top N Control: Use the slider to define the exact number of recommendations to be generated.
- \* History Check (Contextual Feedback): Check the box to see a sample of movies the user already rated.
- \* Click ' Generate Recommendations' to view the final, human-readable output (Movie Titles mapped from Item IDs).

### **4. Common Errors and Troubleshooting**

If the application fails or errors appear, refer to the solutions for the specific challenges encountered during development:

#### A. Error: ModuleNotFoundError or NumPy Compatibility Failure

Traceback: Indicates missing libraries or a version mismatch (e.g., NumPy 2.x error).

Fix: The required libraries were not installed correctly. Rerun the command in Section 1.3 exactly.

#### B. Error: SSL Certificate Verification Failure (macOS Specific)

Traceback: URLError: <urlopen error [SSL:

**CERTIFICATE\_VERIFY\_FAILED]**

Fix: This is a certificate issue. Run the Python built-in certificate installer script:

/Applications/Python\ 3.11/Install\ Certificates.command

(Adjust the Python version number as needed.)

**C. Error: Movie Title File Not Found (Path Issue)**

Browser Error: "Movie title file not found  
at: /.../.surprise\_data/ml-100k/u.item"

Context: The Streamlit cache might be holding a failed path result.

Fix: Clear the Streamlit cache:

In the running Streamlit browser app, click the  $\equiv$  menu (top right).

Select "Clear caches" and Rerun the app.