SAE Viewport Prediction

This project predicts where a person will look next in a 360° video using a model called Spatiotemporal Attentive Entropy (SAE).

Initial Setup:

- Make a folder called “SAE Viewport Prediction Folder” on your desktop
- Open a terminal and cd into that folder

Setup Instructions:

1. Clone the repository
   - git clone https://github.com/IamArmanNikkhah/sae-viewport-prediction.git
   - cd sae-viewport-prediction
   - git checkout -b feature/week-5-training-pipeline origin/feature/week-5-training-pipeline → This will ensure that you are in the branch that has all the code and files needed to successfully run the pipeline
   - git branch

Create a virtual environment:

1. Mac/Linux:
   - python3 -m venv venv
   - source venv/bin/activate
2. Windows (PowerShell):
   - python -m venv venv
   - .\venv\Scripts\activate.ps1 → If this is not working, ensure that you don’t have any PowerShell restrictions on.

Install dependencies:

- pip install -r requirements.txt

Download the Dataset:

- https://zenodo.org/records/10650505
- Download Image_H.7z manually from the Zenodo page. → Note: This folder might take around 10+ minutes to download, depending on computer.
- While waiting for the images to download, create a folder called ‘data’ inside the ‘sae-viewport-prediction’ folder.
- Extract the data using 7-Zip or any unzip tool.
- Move the extracted folder into the ‘data’ folder you just created.
- Your data folder should now look like this:
- SAE Viewport Prediction Folder

```
└── sae-viewport-prediction/
    ├── src
    ├── data
    ├  └── H  → Extracted folder from Image_H.7z
```

├ └── SalMaps
├ └── Scanpaths → This folder will be found in folder ‘H’. Move it out of ‘H, into ‘data’.
├── tests
├── scripts
└── .vscode

Run the Code → Train the Model

1. Mac/Linux/Windows:
    - python scripts/process_all_scanpaths.py
    - python scripts/make_npy_from_cleaned.py
    - python scripts/generate_vmf_lut.py
    - Your data folder should now look like this:
    - SAE Viewport Prediction Folder
      └── sae-viewport-prediction
      ├── src
      ├── data
      ├ └── H
      ├ └── SalMaps
      ├ └── Processed
      ├ └── Scanpaths
      ├── tests
      ├── scripts
      └── .vscode
    - python -m src.training.train → This will start the training process using the datasets.

Evaluate the Model

1. Mac/Linux/Windows:
    - python -m src.evaluation.evaluate → This will run the evaluation script and print the MAE and NLL metrics.