ROVIA: User manual

About

ROVIA is an automated highlight generator for underwater videos captured by ROV/AOVs. ROVIA generates clips from input videos. The resolution and frame rate of the input frames are maintained.

Platform

Processor: MacBook M1
Memory: 16GB+
OS: MacOS 12+
Python: 3.10+

Steps:

1) Install miniconda:

- Download miniconda as listed here: https://developer.apple.com/metal/tensorflow-plugin/

- Run these commands on the terminal:

```
bash ~/miniconda.sh -b -p $HOME/miniconda
source ~/miniconda/bin/activate
conda install -c apple tensorflow-deps
```

2) Install TensorFlow

python -m pip install tensorflow-macos

3) Install TensorFlow metal plugin

python -m pip install tensorflow-metal

4) Install requirements

pip install -r requirements.txt

5) Ready to run Rovia

python rovia.py -h

Output should look like:

```
(base) banerjee@Pujas-MacBook-Pro-New Playground % python rovia.py -h
usage: rovia.py [-h] [-m MODEL] [-f FOLDER] [-v VERBOSE]

~~ Rovia: The coolest underwater highlight generator ~~
 Incubated @ Ocean Exploration Cooperative Institute

options:
  -h, --help            show this help message and exit
  -m MODEL, --model MODEL
                        Optional: Path to the model file
  -f FOLDER, --folder FOLDER
                        Required:Folder where videos are stored
  -v VERBOSE, --verbose VERBOSE
                        Optional:Less or more chatter? 0/1
```

Options:

-m / --model

By default, the script loads ‘grama.hdf5’ model located in the same directory as this script. For custom models, supply the relative path to the model file w.r.t the directory where the script is located.

-f / --folder

Supply the path to the folder where input videos are saved (in single quotes, with respect to current folder and terminate the path with a ‘/’). The script has been tested to work on

videos as long as 2 hours. Larger video files can potentially cause memory issues, especially with RAM <32GB.

-v / --verbose

If set to 1(default), you can monitor progress of script.

Output:

The code creates a folder called “Rovia_clips” in the directory where the script is saved. This folder holds all the generated highlights.

Example to run the code:

python rovia.py -f ‘./Video/’ (the path has to be supplied as string, within quotes).
Here, our input video files are within the same directory. If all the files are not present in the same directory, please provide the correct path reference to the script file.

```
python rovia.py -f './Video/' -m './grama.hdf5'
```

Note:
Once all the packages are installed, no need to re-run the installation steps before running the python script (rovia.py) every time. However, you may require activating the miniconda environment. To do so, type the following command on the terminal.

```
source ~/miniconda/bin/activate
```