California Poppy Time-lapse Analysis: Installation and Usage Guide

This guide will help you set up and run the California poppy time-lapse analysis script to track flower opening and closing cycles. The analysis will detect poppy flowers, track them across frames despite wind movement, and determine when each flower begins opening, is fully open, begins closing, and is fully closed.

Prerequisites

Before running the analysis, make sure you have:

1. Python 3.7 or newer installed
2. Your time-lapse images exported from Adobe Lightroom Classic (see the export guide)
3. Basic familiarity with running Python scripts

Installation Steps

Step 1: Create a Virtual Environment (Recommended)

```bash
# For Windows
python -m venv poppy_env
poppy_env\Scripts\activate

# For macOS/Linux
python -m venv poppy_env
source poppy_env/bin/activate
```

Step 2: Install Required Packages

Save the following as `requirements.txt`:

```
numpy>=1.19.0
pandas>=1.1.0
matplotlib>=3.3.0
opencv-python>=4.5.0
scikit-image>=0.18.0
scikit-learn>=0.24.0
scipy>=1.6.0
Pillow>=8.0.0
```

Then install the dependencies:

```bash
pip install -r requirements.txt
```

Step 3: Save the Analysis Script

Save the provided Python script as `poppy_analyzer.py`.

Running the Analysis

Basic Usage

```bash
python poppy_analyzer.py --input /path/to/your/images --output /path/for/results --int
```

Full Options

```bash
python poppy_analyzer.py --input /path
```