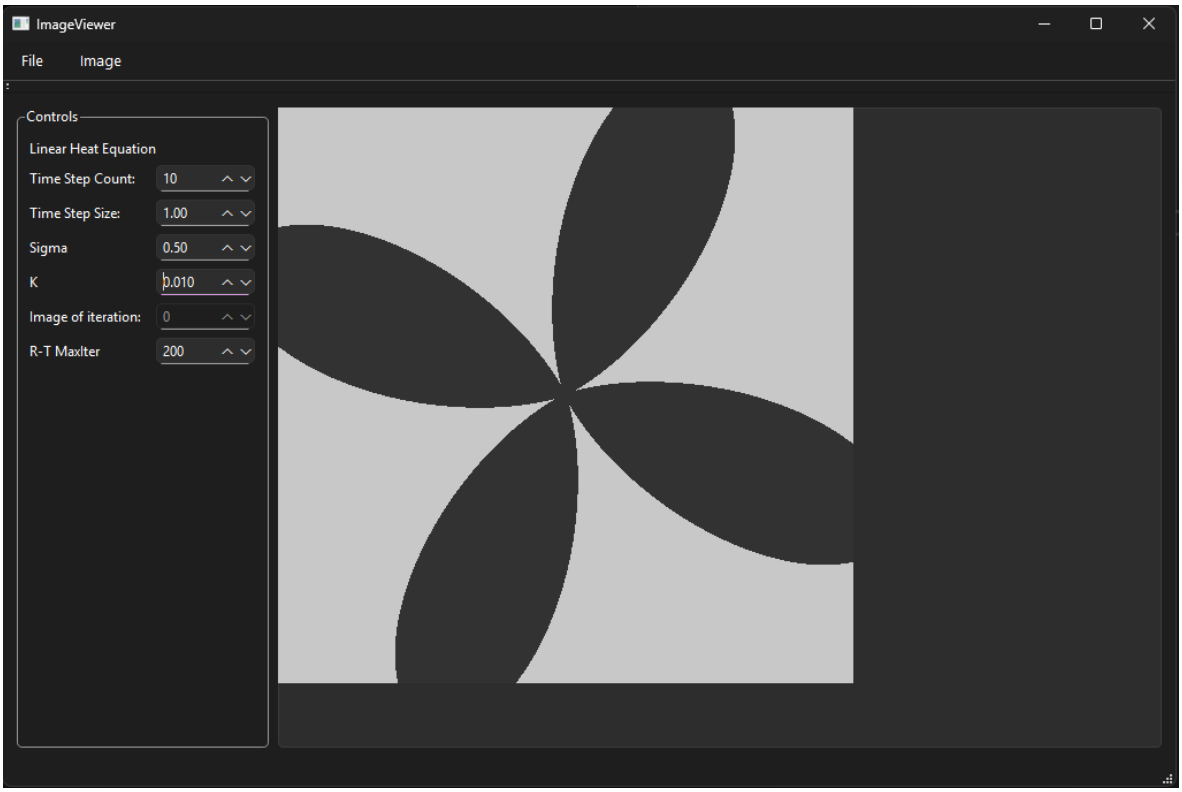
Image Processing App

This application provides a suite of image processing methods to manipulate images. Below is a brief overview of the available functionalities.



Features (Image)

- **Invert Image**: Reverses the pixel intensities of the image (e.g., black to white, white to black).
- **Equalization of Histogram**: Enhances image contrast by redistributing pixel intensities based on the histogram.
- **Full Scale Histogram Stretch**: Stretches the histogram of the image to the full intensity range to improve contrast.
- **Convolution**: Applies a kernel to the image for effects like blurring, sharpening, or edge detection. Hard-coded convolution mask 5x5
- **Linear Heat Equation**:
    - **Explicit**: Solves the heat equation using an explicit finite difference scheme (controlled by Time Step Count and Time Step Size, Sigma <= 0.25).

    - **Implicit**: Solves the heat equation using an implicit scheme for better stability. (controlled by Time Step Count and Time Step Size, Sigma > 0.25).

- **Perona-Malikova** (Semi-Implicit): Applies anisotropic diffusion to reduce noise while preserving edges (controlled by K parameter, Time Step Count and Time Step Size, Sigma for data filtration by Heat equation).
- **Edge Detector**: Identifies edges in the image using gradient-based techniques. (controlled by K parameter)
- **MFC (Mean Field Consistency)**: A method for image segmentation or denoising based on mean field theory. (controlled by Time Step Count and Time Step Size, Sigma for data filtration by Heat equation).
- **GMFC (Generalized Mean Field Consistency)**: An enhanced version of MFC with broader applicability. (controlled by K parameter, Time Step Count and Time Step Size, Sigma for data filtration by Heat equation).
- **Eikonal R-T Distance Function**: Computes distance maps using the Eikonal equation with R-T iterations (controlled by R-T MaxIter).

Usage

1. Open the app and load your image.
2. Use the **Controls** panel to adjust parameters such as Time Step Count, Time Step Size, Sigma, K, and R-T MaxIter.
3. Select the desired image processing method from the menu.
4. Apply the method and view the result in the image viewer.

Notes

- Adjust parameters carefully to achieve the desired effect, especially for iterative methods like the Linear Heat Equation and Eikonal R-T Distance Function.
- Best value for K parameter is 0.01, as the app work with image data with values from <0,255>.