**Aquiplicity 2025 - Star Trail Image Stacker (v4) User Manual**

Welcome to **Aquiplicity 2025 - Star Trail Image Stacker**, a user-friendly web application designed to create stunning star trail images or reduce noise in astrophotography by stacking multiple images. This manual will guide you through the features, interface, and steps to use the software effectively.

**Table of Contents**

1. Overview
2. System Requirements
3. Getting Started
4. User Interface
5. Step-by-Step Guide
6. Stacking Algorithms
7. Troubleshooting
8. Tips for Best Results
9. Contact Support

**Overview**

Aquiplicity 2025 - Star Trail Image Stacker (v4) allows you to combine multiple images (JPG, PNG, or WEBP formats) into a single image using different stacking algorithms. It’s perfect for:

* Creating **star trail** images by combining long-exposure shots of the night sky.
* Reducing noise in astrophotography through image averaging.
* Experimenting with maximum intensity stacking for creative effects.

The application runs entirely in your web browser, requires no installation, and is designed for ease of use with a clean interface.

**System Requirements**

* **Web Browser**: Latest version of Chrome, Firefox, Edge, or Safari.
* **Operating System**: Any OS supporting the above browsers (Windows, macOS, Linux, etc.).
* **Memory**: At least 4GB RAM (8GB recommended for large images or many files).
* **Images**: All images must have the **same dimensions** (width and height in pixels).
* **File Formats**: JPG, PNG, or WEBP.

**Getting Started**

1. **Open the Application**:
   * Load the HTML file (Aquiplicity\_2025\_v4.html) in a compatible web browser by double-clicking it or dragging it into the browser window.
   * Alternatively, host the file on a local or remote web server and access it via a URL.
2. **Prepare Your Images**:
   * Ensure all images you plan to stack have the **same dimensions** (e.g., 1920x1080 pixels).
   * Save images in JPG, PNG, or WEBP format.
   * For star trails, use long-exposure images of the night sky taken in sequence.
   * For noise reduction, use multiple images of the same scene (e.g., deep-sky objects).
3. **Familiarize Yourself with the Interface**:
   * See the User Interface (#user-interface) section for a detailed overview.

**User Interface**

The interface is divided into several key areas:

**1. Marquee (Top Banner)**

* Displays a scrolling message with quick instructions: *"Load multiple images (JPG, PNG, WEBP). Select stacking algorithm. Click Stack Images. Ensure all images have the SAME dimensions."*

**2. Controls (Top Panel)**

* **File Input**: Click to select multiple image files (JPG, PNG, WEBP).
* **Algorithm Selector**: Choose a stacking algorithm:
  + Lighten (Star Trails)
  + Average (Noise Reduction)
  + Maximum (Similar to Lighten)
* **Stack Images Button**: Starts the stacking process (enabled when 2+ valid images are loaded).
* **Cancel Button**: Appears during stacking to stop the process.
* **Reset Button**: Clears loaded images and resets the application.
* **Image Count**: Shows the number of loaded images (e.g., "(5 images loaded)").

**3. Main Container**

* **Thumbnail Strip (Left)**: Displays thumbnails of loaded images with their filenames and dimensions.
* **Working Area (Right)**:
  + **Canvas**: Shows the stacked result or a placeholder message ("Select images using the button above...").
  + **Progress Bar**: Appears during image loading or stacking to show progress.
  + **Status Message**: Provides updates (e.g., "Loading 5 images..." or "Stacking complete").
  + **Save Stacked Image Button**: Saves the final stacked image as a PNG file.

**Step-by-Step Guide**

Follow these steps to stack images:

1. **Load Images**:
   * Click the **file input button** (labeled "Choose Files" or similar) in the top control panel.
   * Select multiple images (JPG, PNG, WEBP) from your computer. Hold Ctrl (Windows) or Cmd (macOS) to select multiple files.
   * The application will load the images, display thumbnails in the left strip, and show a progress bar.
   * Ensure all images have the **same dimensions**. If not, the app will skip mismatched images and display an error in the status message.
2. **Verify Loaded Images**:
   * Check the **thumbnail strip** to confirm all images loaded correctly.
   * The **image count** (e.g., "(5 images)") updates to show the number of valid images.
   * The status message will indicate if there are issues (e.g., "2 images had wrong dimensions").
3. **Select a Stacking Algorithm**:
   * Use the **algorithm dropdown** to choose:
     + **Lighten**: Best for star trails (keeps the brightest pixels).
     + **Average**: Best for noise reduction (averages pixel values).
     + **Maximum**: Similar to Lighten, keeps maximum pixel values.
   * See Stacking Algorithms (#stacking-algorithms) for details.
4. **Stack Images**:
   * Once 2 or more valid images are loaded, the **Stack Images** button will enable.
   * Click **Stack Images** to start processing.
   * A progress bar and status messages (e.g., "Processing image 3 / 5...") will appear.
   * To stop the process, click the **Cancel** button (appears during stacking).
5. **View the Result**:
   * The stacked image appears on the canvas in the working area.
   * The status message confirms completion (e.g., "Stacking complete: 5 images processed using 'lighten'").
6. **Save the Stacked Image**:
   * Click the **Save Stacked Image** button to download the result.
   * The file is saved as stacked\_image\_[algorithm]\_[frameCount]frames.png (e.g., stacked\_image\_lighten\_5frames.png).
7. **Reset (Optional)**:
   * Click the **Reset** button to clear all loaded images, thumbnails, and the canvas.
   * This prepares the app for a new set of images.

**Stacking Algorithms**

The application offers three algorithms to combine images:

1. **Lighten (Star Trails)**:
   * Keeps the **brightest pixel** at each position across all images.
   * Ideal for creating star trails, where bright stars form continuous streaks against a dark sky.
   * Example: Combines multiple long-exposure shots to show star movement.
2. **Average (Noise Reduction)**:
   * Calculates the **average pixel value** for each position across all images.
   * Perfect for reducing noise in astrophotography (e.g., deep-sky images).
   * Example: Combines multiple exposures of a galaxy to smooth out random noise.
3. **Maximum (Similar to Lighten)**:
   * Similar to Lighten, keeps the **maximum pixel value** at each position.
   * Useful for creative effects or when Lighten produces overly bright results.
   * Example: Highlights bright features in composite images.

**Troubleshooting**

|  |  |
| --- | --- |
| **Issue** | **Solution** |
| **Stack Images button is disabled** | Ensure 2+ images with the same dimensions are loaded. Check the status message for errors. |
| **Some images didn’t load** | Verify images are JPG, PNG, or WEBP and not corrupted. Check dimensions match the first loaded image. |
| **"Dimension mismatch" error** | All images must have identical dimensions. Resize images in an external editor (e.g., Photoshop, GIMP) before loading. |
| **Stacking is slow** | Large images or many files require more processing time. Reduce image size or use fewer images. |
| **Canvas shows an error** | Reset the app and reload images. Ensure your browser is up to date. |
| **Save button doesn’t work** | Ensure stacking is complete. If the canvas is blank, an error occurred—check the status message. |
| **Browser crashes** | Large images or too many files may exceed memory. Try fewer or smaller images. |

If issues persist, open the browser’s **Developer Console** (F12, then “Console” tab) to view detailed error messages.

**Tips for Best Results**

* **Image Preparation**:
  + Use images with identical dimensions and alignment (e.g., taken with a tripod).
  + For star trails, shoot in a dark location with minimal light pollution.
  + For noise reduction, capture multiple exposures of the same scene without moving the camera.
* **File Size**:
  + Smaller images (e.g., 1920x1080) process faster than high-resolution ones (e.g., 6000x4000).
  + Compress images if processing is slow, but maintain quality for the final result.
* **Number of Images**:
  + Star trails: Use 20–100 images for smooth trails.
  + Noise reduction: 5–20 images are often sufficient for noticeable improvement.
* **Browser Performance**:
  + Use a modern browser (Chrome or Firefox recommended) for best performance.
  + Close other tabs to free up memory when stacking large images.
* **Experiment with Algorithms**:
  + Try different algorithms to see which best suits your images.
  + Lighten is typically best for star trails, while Average excels for deep-sky objects.

**Contact Support**

Aquiplicity 2025 is an open-source project maintained by the community. For support:

* **Check the GitHub Repository**: Look for documentation or issues at the project’s GitHub page (if available).
* **Community Forums**: Search astrophotography forums (e.g., Cloudy Nights, Reddit’s r/astrophotography) for tips.
* **Report Bugs**: If you find a bug, note the browser, steps to reproduce, and console errors (F12 > Console). Share with the developer community via GitHub or relevant forums.

**Happy Stacking!**

We hope Aquiplicity 2025 helps you create breathtaking star trails and noise-free astrophotography images. If you enjoy the software, share your results with the astrophotography community and spread the word!

*Last Updated: April 17, 2025*