

Stabilizing a Shaking or Vibrating Video with ProAnalyst

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Abstract

Camera shake and vibrating objects are common problems faced by many image analysis professionals. The ProAnalyst Stabilization module provides a solution to this problem by providing the means to stabilize shaking or vibrating video images, simulating video acquisition by a stationary camera. This process is accomplished by locating and tracking video features that should maintain a stationary position. The shift and rotation necessary to maintain the features in a fixed position can then be computed, allowing stabilization to be performed for any combination of unwanted horizontal, vertical, or rotational motion.

Topics Covered in This Tutorial

1. The ProAnalyst Stabilization module

Files Needed for This Tutorial

1. *demo_jittery.avi*

The ProAnalyst Stabilization Module


Many of the features of the Stabilization module are based on the same underlying concepts as the 2D Tracking module. Stabilization requires the definition of a number of high-contrast regions within an image which are then tracked from frame to frame over the course of the video sequence. As with 2D Tracking, you may define and set regions based on distinct features within an image. The Stabilization module also includes a prototype feature extraction tool, the purpose of which is to automatically locate high-contrast regions within the image and define them at its discretion. Automatic feature extraction will be covered later in this tutorial.

Processing the Image for Feature Tracking

1. Create a new ProAnalyst project and add the *demo_jittery.avi* video file.
2. Double-click on the *demo_jittery.avi* thumbnail to launch the Measurement window.



Figure 1

3. Click the  icon to open the **Image Processing** control panel.
4. Click the **Display B&W** button.

5. Adjust the **B&W Image Settings** sliders until several features within the image become clearly defined (Figure 2).



Figure 2

Stabilizing the Video Sequence



1. Click the  icon to open the **Image Stabilization** control panel.
2. Click the **Enable** button to activate the control panel. Note that a “Stabilized” option has been added to the video view tabs.
3. Add, define, and set three features corresponding to three visually contrasting regions of the image (Figure 3).



Figure 3

4. Click the “Feature 1”  icon to open the Stabilization Feature Track Settings window.
5. Set the “Search Region Multiplier” and “Limit on Distance From Last” text fields to 700.
6. Set the “Threshold Tolerance” to 0.85.
7. Click the **Apply** button followed by the **Close** button.
8. Repeat steps 4 – 7 for Feature 2 and Feature 3.
9. Click the **Track** button. If any of your features are lost you may redefine them and hit **Track** again to repeat the process.
10. When the feature tracking has been completed successfully click the **Stabilize** button. The Measurement Window will automatically switch to the “Stabilized” view (Figure 4).

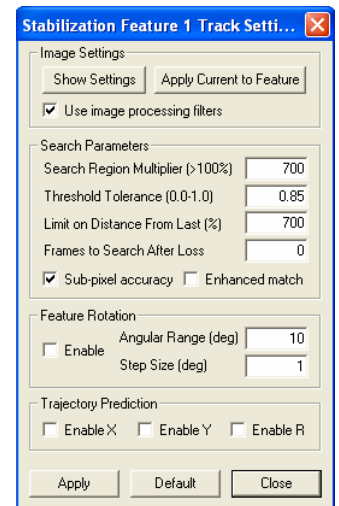


Figure 4


11. Press the  button to view the stabilized version of your video. You will notice that each stabilized frame will be drawn over the top of the previous frames (Figure 5).

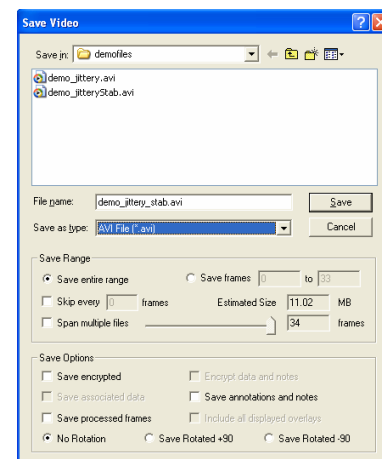


Figure 5

Saving the Stabilized Video

Before performing any kind of tracking or analysis on the stabilized video, it must first be saved as a new file. You can then add the stabilized video to a new or existing project to and continue with your analysis.

1. Click the **Save Stabilized Video** button to open the “Save Video” dialog box.
2. The default file name will be the name of your video with the suffix “_stab” appended to it. This is not mandatory and may be changed at your discretion.
3. After modifying any parameters that you wish, click the **Save** button to save your video file.



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