User Guide

Version 1.0

Lambda Vue Application

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Introduction

This document provides an overview of Lambda Vue Application software. Lambda Vue utilized a project-based management scheme to facilitate the organization of your works. A project is composed of a source video file or live streaming video and multiple magnified videos processed from the source. A list of video magnification methods currently supported by our software is listed in table below.

Table I. Video Magnification Method Description

Method	Description
Linear Motion	Motion magnification using Eulerian video magnification.
Linear Color	Color magnification using Eulerian video magnification.
Reisz Motion	Motion magnification using Reisz pyramid video magnification. Compared to Linear Motion, this method is slower but often produces less noisy result.

Starting Software

Once Lambda Vue application starts up with a valid license, a popup window will appear (Figure 1) allowing you to:

1. Choose to work on one of the last 5 recently opened projects by selecting it.
2. Browse the file system to open an existing project.
3. Create a new project by
   - Entering the new project name and its location (Figure 2). A warning message will appear if you attempt to create a project with the same name and location as an existing project.
   - Browse the file system to select a video file as source or choose one of the cameras attached to your machine (Figure 3).
4. View documents related to this software.

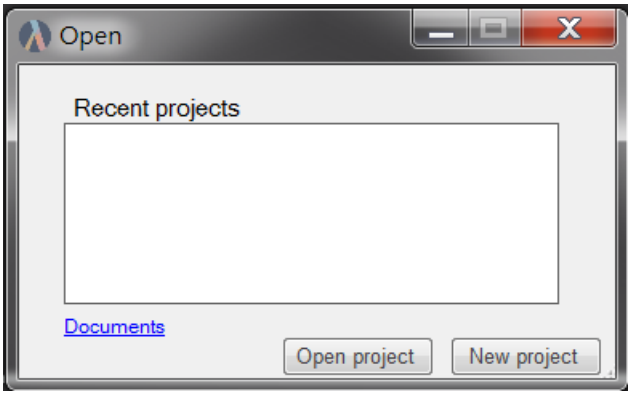

Figure 1 - Application start popup window

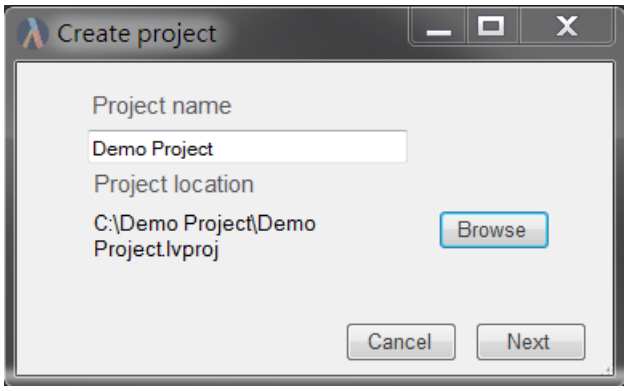

Figure 2 - Create Project popup window

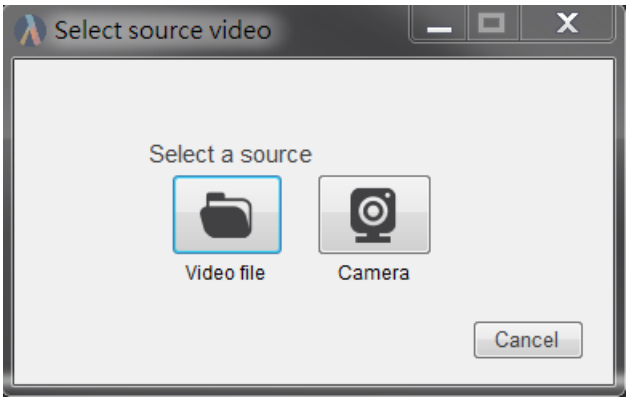

Figure 3 - Source Selection

File-based Project

Figure 4 diagram the various component of the user interface when working with video file source.

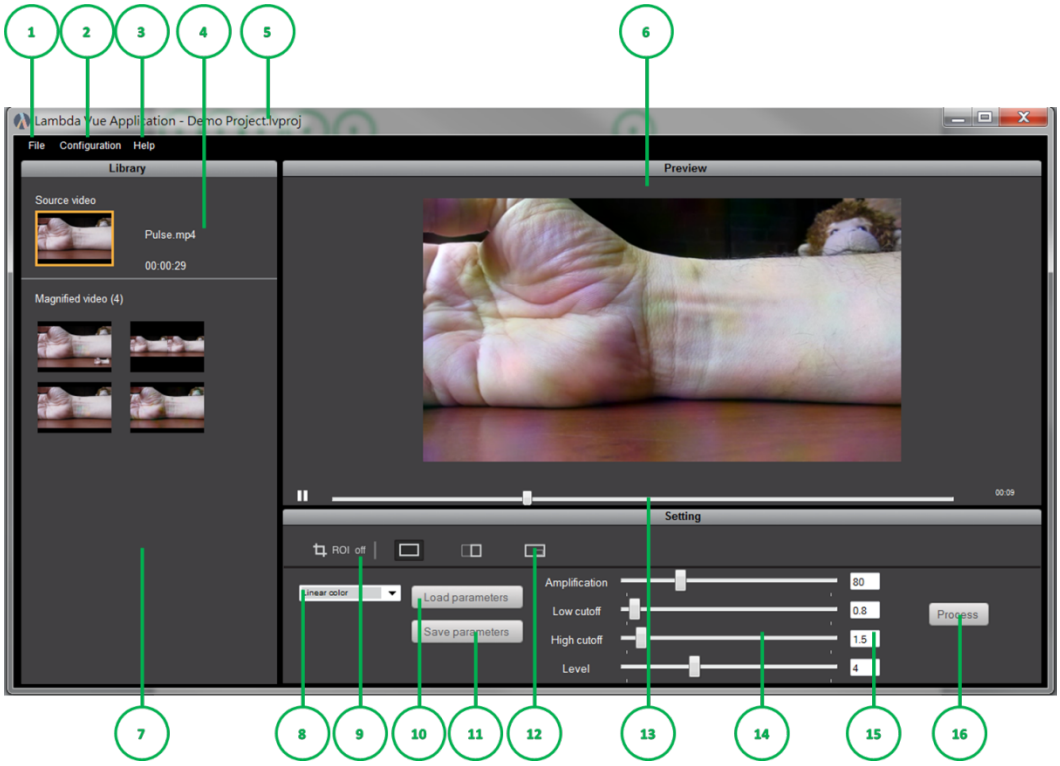

Figure 4 - Annotated File-based Project Interface

Table II. File-based Project Interface Description

No.	Item	Description
1	File	File/project related functions, including creating new , open existing, and open recent project
2	Configuration	Change the default project folder location and initial values
3	Help	User manual, license agreement, and software info
4	Source video	Source video to perform video magnification on
5	Current project	Name of the current project
6	Preview	Provide a preview of processing based on current parameter settings
7	Magnified video	List of processed video
8	Magnification methods	Choose one of the supported video magnification methods (see Table I)

9	Region of Interest (ROI)	Enable/disable ROI selection
10	Load parameters	Load previous saved processing parameters
11	Save parameters	Save current parameter settings
12	Template selection	Choose output video template between processed video only, side-by-side, and picture-in-picture
13	Video playback	Video playback button and time bar
14	Parameters (sliding bar)	Sliding bars to set parameters used to process video
15	Parameters (input)	Input box to manual input parameters used to process video
16	Process	Start processing source video using the current parameter setting and save it to output file

Video Processing

Once you pressed the ***Process*** button and enter a name for the result video (Figure 5), Lambda Vue Application will start magnifying the source using the parameters from the start of the video (Figure 6). A progress circle will appear indicating the status of the processing. During this time, all interface functions are disabled except for Configuration, Help, and ***Stop*** button if you wish to cancel the current processing.

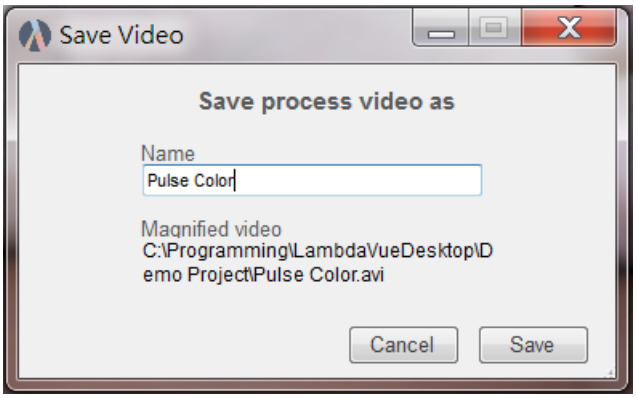

Figure 5 - Save Process Video popup window

Figure 6 - Video Processing in File-based Project

Working with Magnified Video

Selecting one of the magnified video (anytime except during processing) will switch the interface to the magnified video view (Figure 7). Here, you can

- Playback the selected magnified video
- View information about this video
- Take notes for the selected video
- Delete the selected video

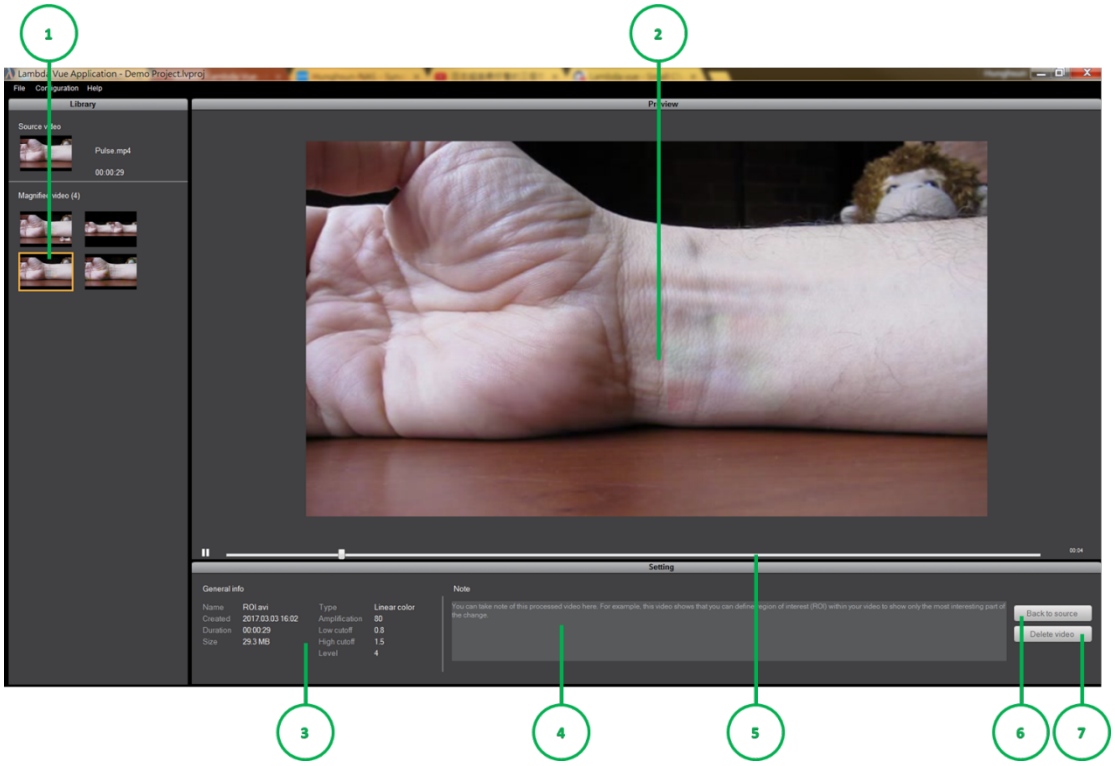

Figure 7 - Magnified Video Playback

Table III. Magnified Video Interface Description

No.	Item	Description
1	Selected magnified video	Yellow box highlight the current selected magnified video
2	Playback screen	Playback area for the selected magnified video
3	Video info	Name, create time, duration, file size, and parameters used to process the selected magnified video
4	Notes	Textbox area to enter notes regarding the selected magnified video
5	Video playback	Video playback button and time bar
6	Back to source	Go back to file-based project's main page (same as selecting the source video on the left)
7	Delete video	Delete the selected magnified video. A pop-up window will appear asking you to confirm the deletion

Camera-based Project

Figure 8 diagram the various component of the user interface when working with a camera source.

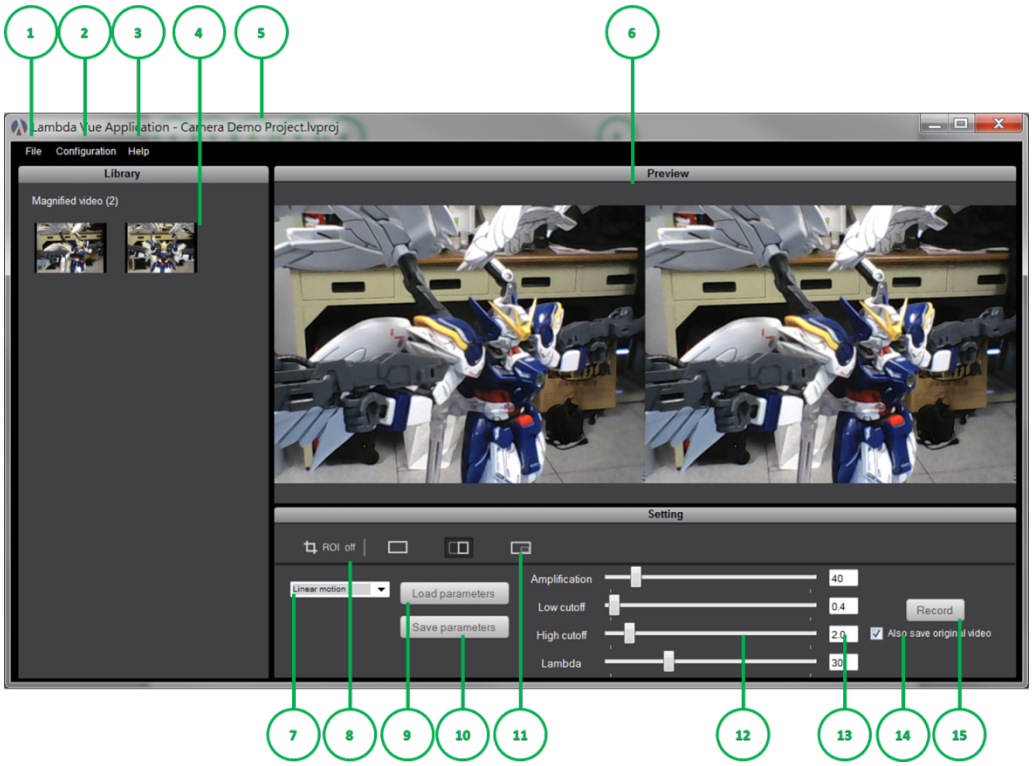

Figure 8 - Annotated Camera-based Project Interface

Table IV. Camera-based Project Interface Description

No.	Item	Description
1	File	File/project related functions, including creating new , open existing, and open recent project
2	Configuration	Change the default project folder location and initial values
3	Help	User manual, license agreement, and software info
4	Magnified video	List of processed video from live camera feed
5	Current project	Name of the current project
6	Preview	Provide a preview of live feed processing based on current parameter settings
7	Magnification methods	Choose one of the supported video magnification methods (see Table I)

8	Region of Interest (ROI)	Enable/disable ROI selection
9	Load parameters	Load previous saved processing parameters
10	Save parameters	Save current parameter settings
11	Template selection	Choose output video template between processed video only, side-by-side, and picture-in-picture
12	Parameters (sliding bar)	Sliding bars to set parameters used to process video
13	Parameters (input)	Input box to manual input parameters used to process video
14	Save original video	Check box to select whether the source video will be saved as well when recording
15	Record	Start processing live feed using the current parameter setting and save it to output file

Live Feed Magnification

Once you pressed the ***Record*** button, Lambda Vue Application will start magnifying the live video feed using the parameters (Figure 9) and the total recording time will appear at the upper-right hand corner of the result video. Stop the live magnification at any time by pressing the ***Stop*** button to bring up a popup window (Figure 10) which let you name the video just recorded or cancel the recording.

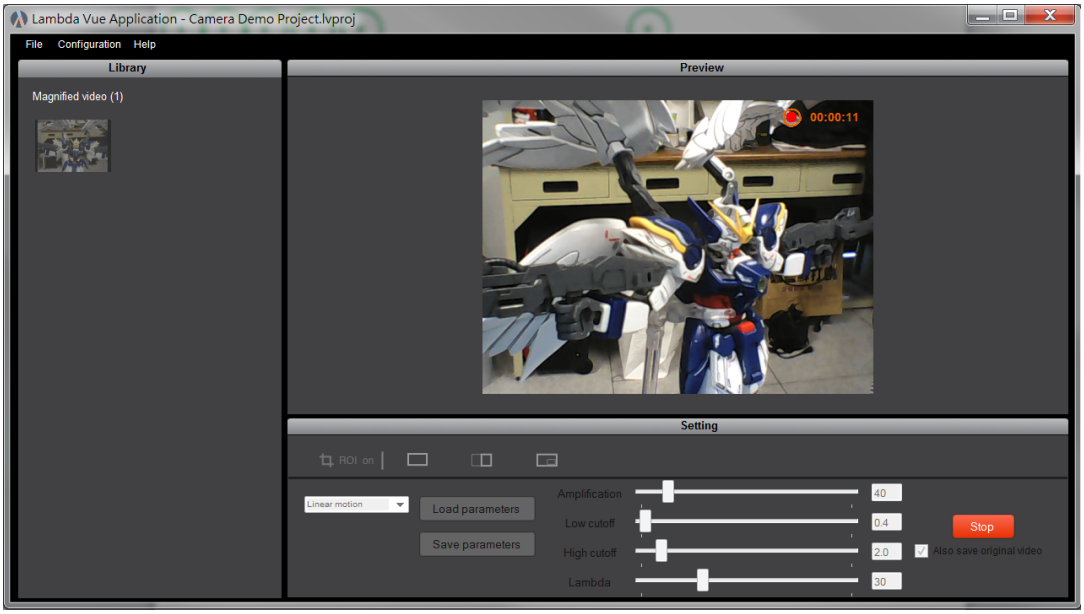

Figure 9 - Live Processing in Camera-based Project

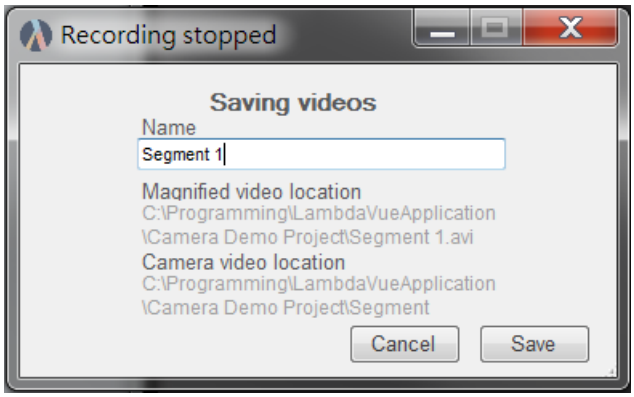

Figure 10 - Save Live Processed Video popup window

Working with Magnified Video

Working with magnified video from a camera source is exactly the same as in file-based project except that you cannot go back to the source (live video feed) by choosing the source video from the left. Please refer to previous section for description.

ROI Capability

Lambda Vue Application provides a Region-of-Interest (ROI) functionality to focus the magnification on a specific region of the video to minimize the background noise (and also speedup processing time). To use this function, select the ***ROI*** button (this will change the ROI status to *ROI on*) and use your mouse click-and-drag an area on the magnified portion of the preview window to define your ROI (Figure 11, while box shows the boundary of the ROI which does ***NOT*** appear on the magnified video). To turn off ROI support, click the ***ROI*** button again and the ROI box will disappear.

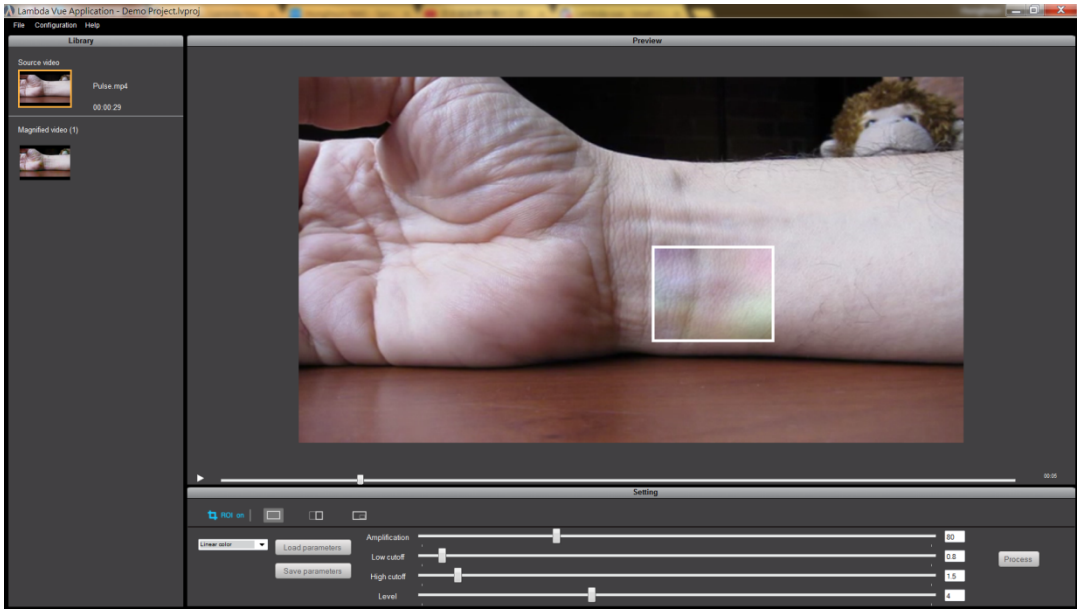

Figure 11 – ROI-enabled Processing

Saving and Loading Parameters

Lambda Vue Application allow you to save a parameters for later use in current or other projects. To save the current parameters, press the ***Save Parameter*** button on the main file or camera interface and a pop-up window will appear (Figure 12). Enter a name for this new set of parameters and press the ***Save*** button to save up to 100 sets (total number of parameters are shown at the lower-right corner). If you have already saved 100 parameters, you will need to delete an old one before you can save another.

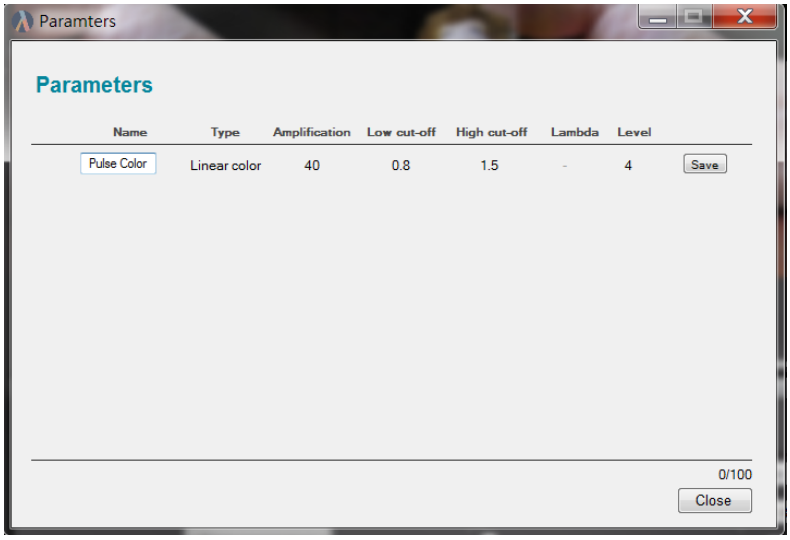

Figure 12 – Save Parameters

To use a save parameter set, press the ***Load Parameter*** button on the main file or camera interface and a pop-up window will appear (Figure 13). Check the parameter set you want and press the ***Load*** button to apply. Click the x button next to the parameter set will delete that parameter set from the system.

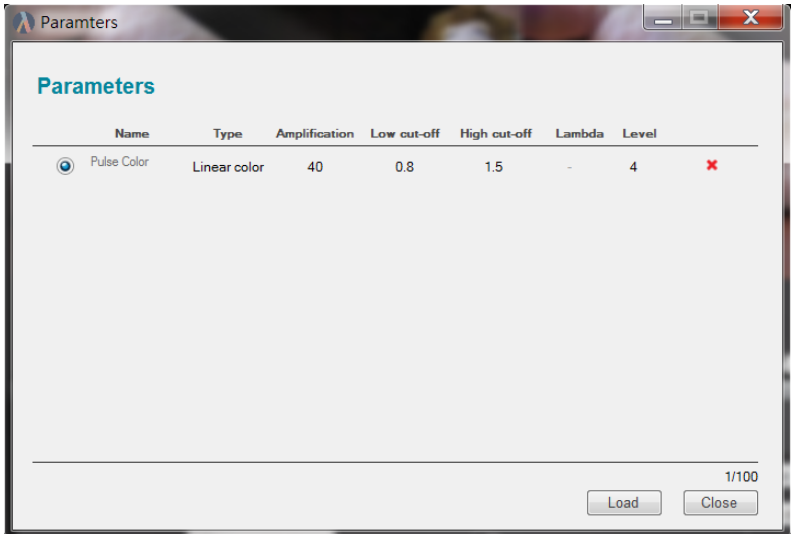

Figure 13 – Load Parameters

Configuration

In the Configuration menu, you can:

- Set the default folder locations (Figure 14). This allow you to specify where you want to keep your project and where Lambda Vue will read source video file from.

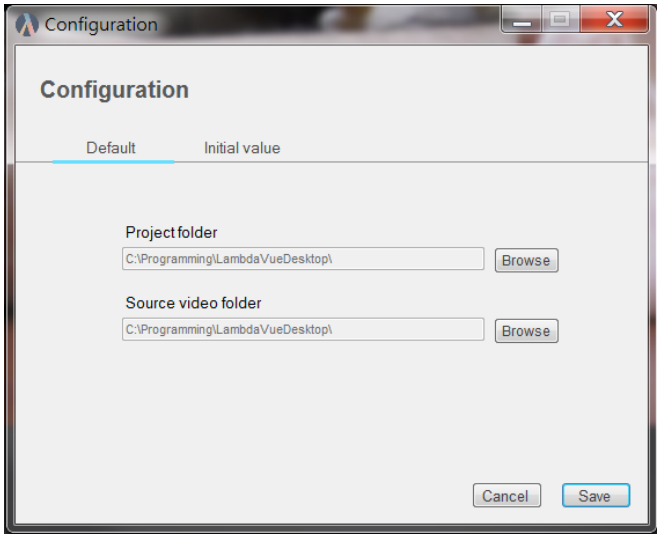

Figure 14 – Default Configuration setting

- Define the initial values of various parameters listed below that Lambda Vue Application will use when you start a new project (Figure 15). Note that once you adjust the values inside a project, those values will be stored and load up the next time you open that project again.

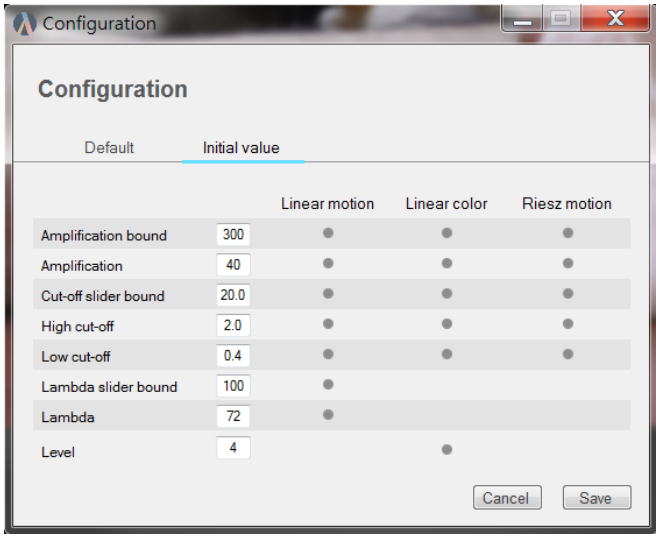

Figure 15 – Initial Value setting

Table V. Parameters Description

Name	Description
Amplification bound	Maximum value you can set the Amplification value to.
Amplification	Specifies the amount of enhancement for the changes in the target frequency range.
Cut-off slider bound	Maximum value you can set cut-off values to.
High cut-off	Upper bound for the target frequency range.
Low cut-off	Lower bound for the target frequency range.
Lambda slider bound	Maximum value you can set Lambda value to.
Lambda	Lower Lambda Value will produce result with finer detail but will also introduce more noise.
Level	Lower Level Value will produce result with finer detail but will also introduce more noise. Maximum Level value is dependent of input video resolution.

Help

In the Help menu, you will see:

- Lambda Vue Application manual (this document)
- License agreement: full copy of the license agreement that you signed when you purchased this software.
- About page (Figure 16): contains a short description of the software, software version number, activation code used to activate this software (masked for security reason), license expiration date, website for our online service where you could manage your licenses, and email address if you wish to contact us.

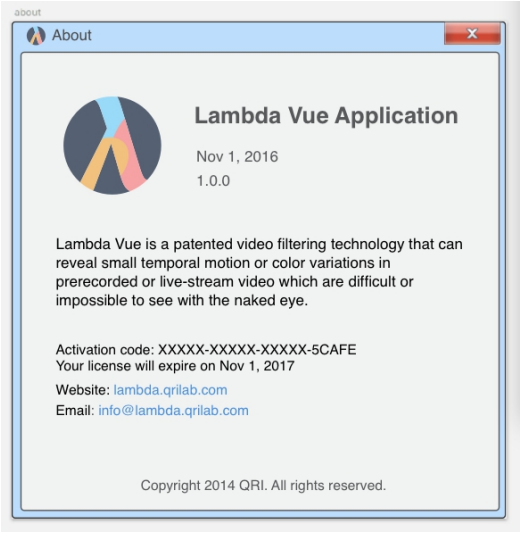

Figure 16 – About popup window