Video Based Guitar Tuning Assistant

Image Analysis Course Project
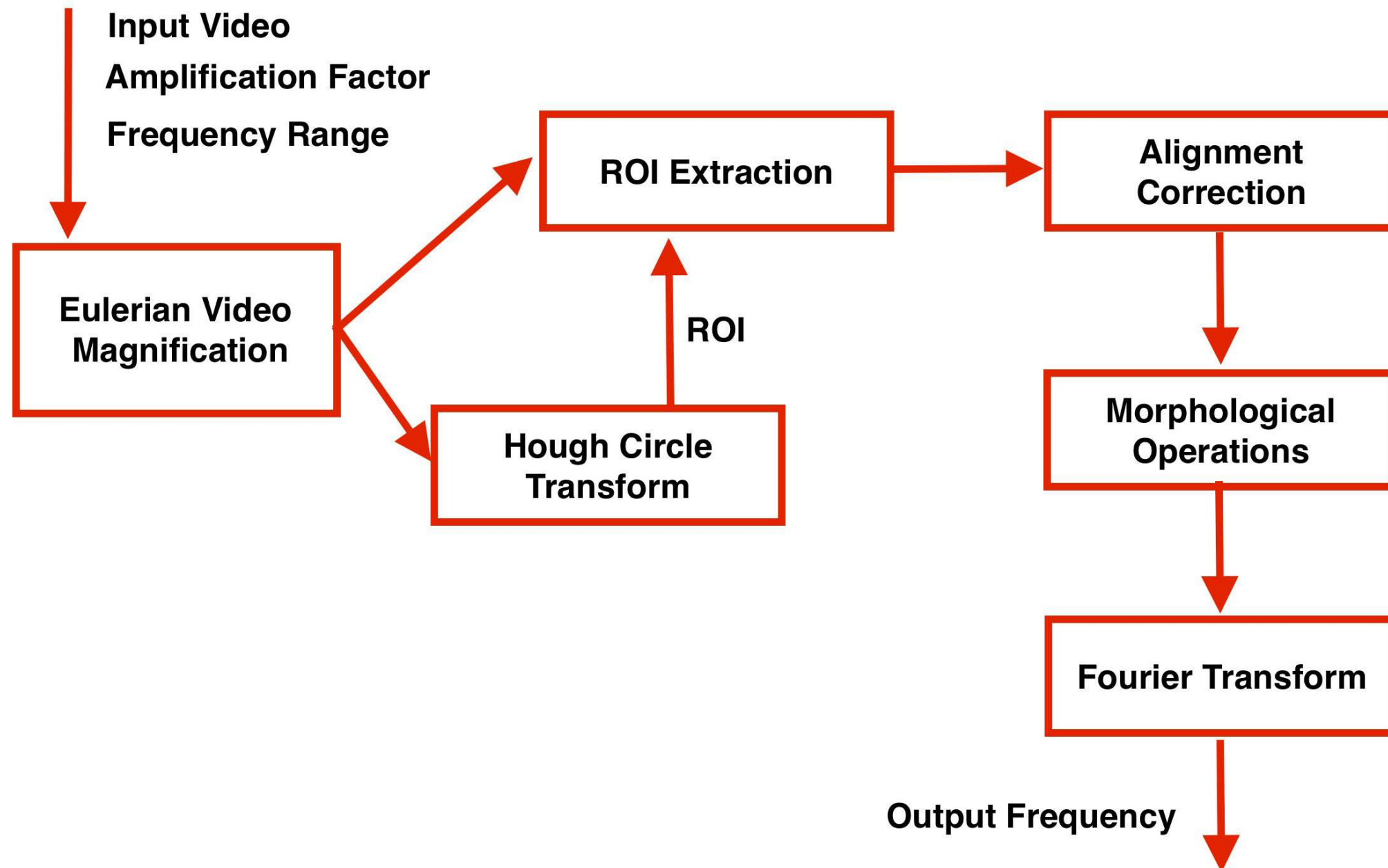
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Objective

- Proposed: Use EVM to detect pulse rate of a Human

- Done: Guitar Tuning Assistant. Outputs frequency of a string.

Assumptions

- String's frequency is not too far from the desired value

- Video is a top view centered at the sound hole (though the strings may not be horizontal)
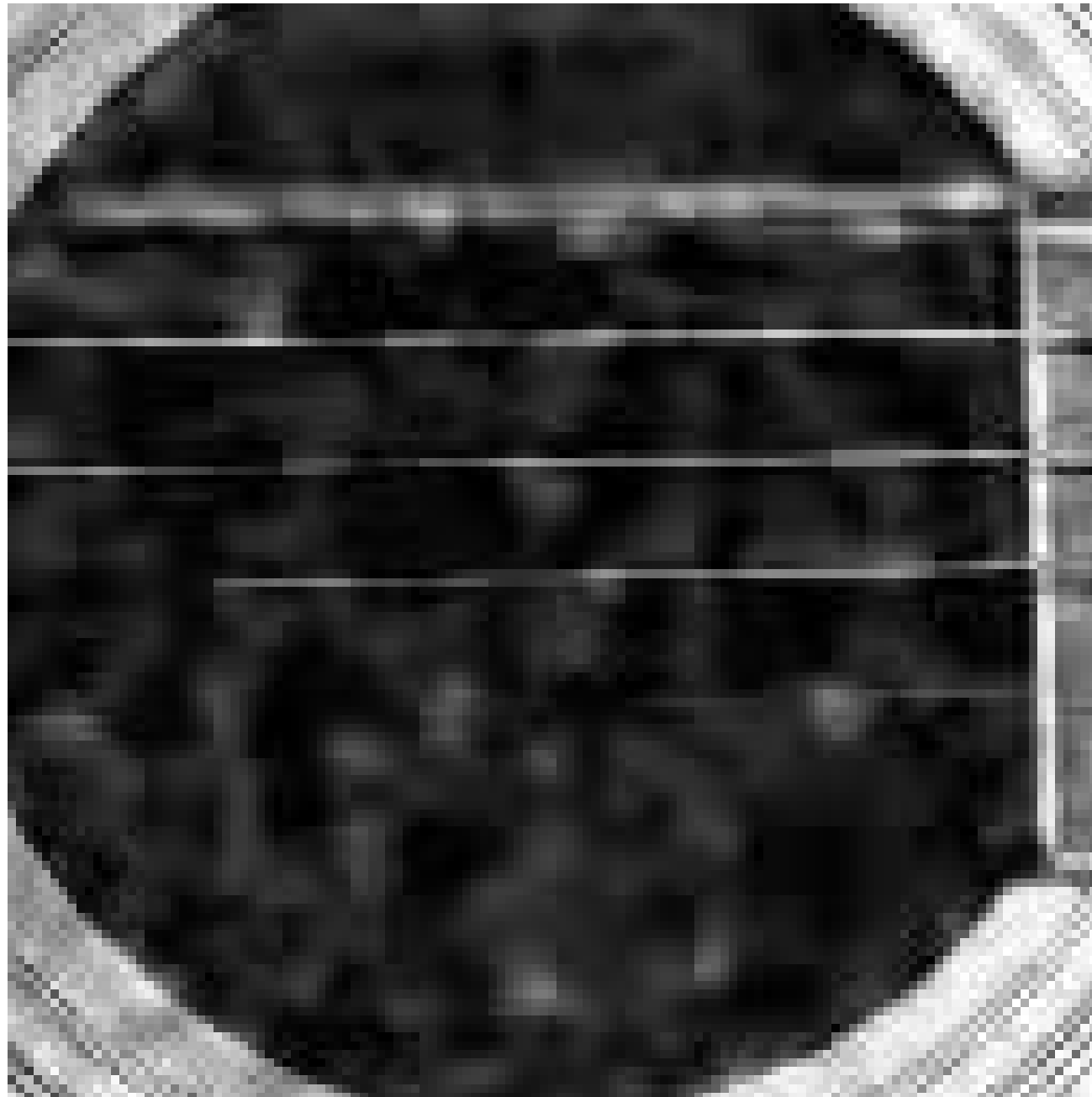
Process

Input Video
Amplification Factor
Frequency Range

Eulerian Video Magnification

ROI Extraction

Alignment Correction

ROI

Hough Circle Transform

Morphological Operations

Fourier Transform

Output Frequency

Input Video

Motion Magnified Video
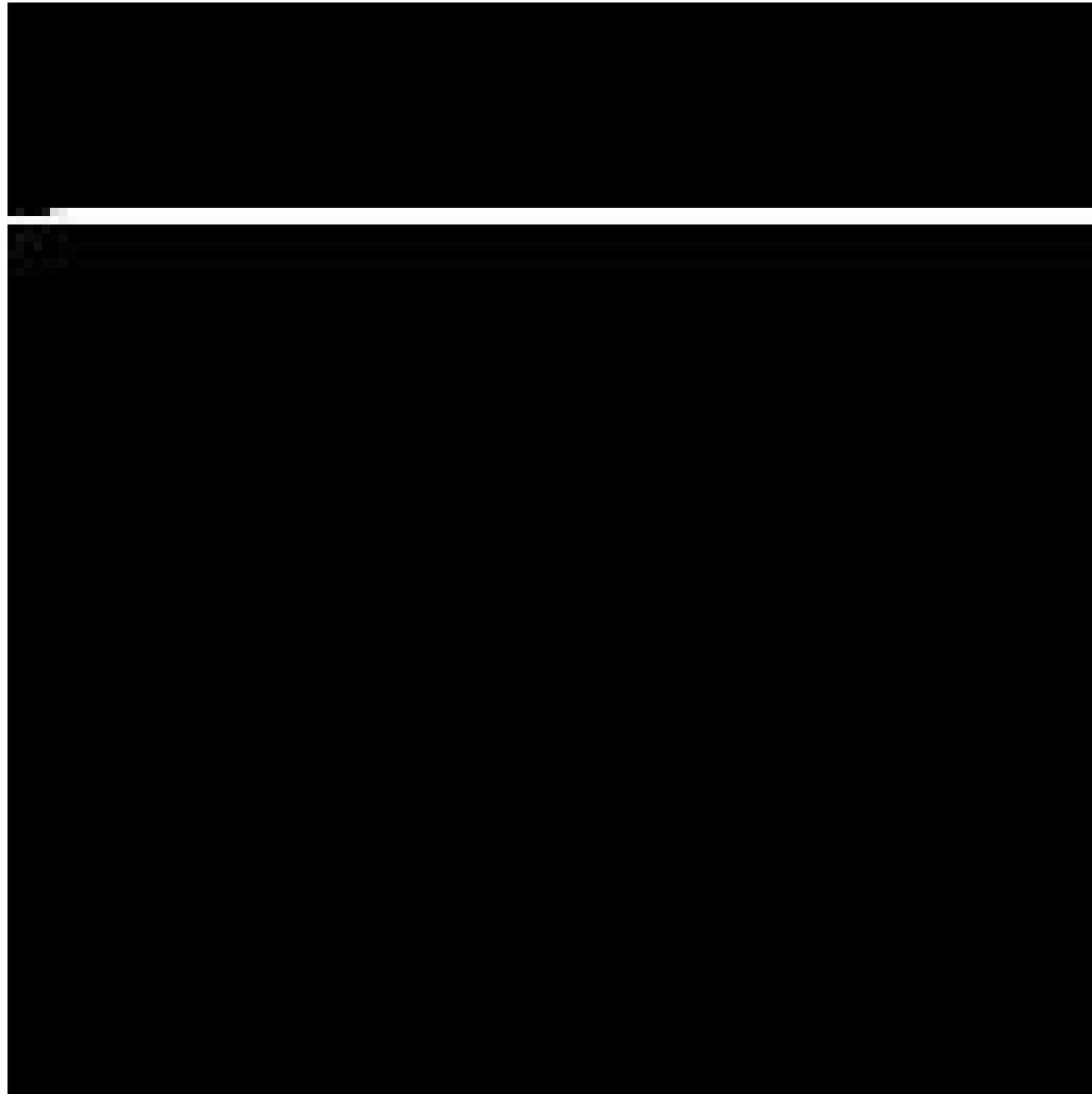
ROI Extracted Video

Final Video
(Before Fourier Transform)

References

- Eulerian Video Magnification for Revealing Subtle Changes in the World, SIGGRAPH 2012

- Non-invasive Subpixel Method for Frequency Measurement Based on Image, ECNDT 2014