Revealing Unseen Motion: Eulerian Magnification Applied to Live Video

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The research project aims to reveal slight changes along specific user defined temporal frequencies in live videos. Video images are captured by a commercial video camera and rendered into RGB image arrays. Laplacian image pyramids are constructed from user defined subsections of the arrays. These multi-scale signal representations are processed by a Finite Impulse Response (FIR) filter to select relevant frequencies and amplify those motions with array multiplication. A novel aspect of the implementation is the use of fiducial markers in conjunction with the Eulerian video magnification algorithm. This allows the significant amplification of periodic temporal motions without representations suffering from camera jitter or sway. Results demonstrate successful visual amplification of almost unobservable motions for live video images.

Awards Won:

Third Award of $1,000

Air Force Research Laboratory on behalf of the United States Air Force: First Award of $750 in each Intel ISEF Category