

# High-Resolution Thermal Imaging with a Handheld VIS+LWIR Camera

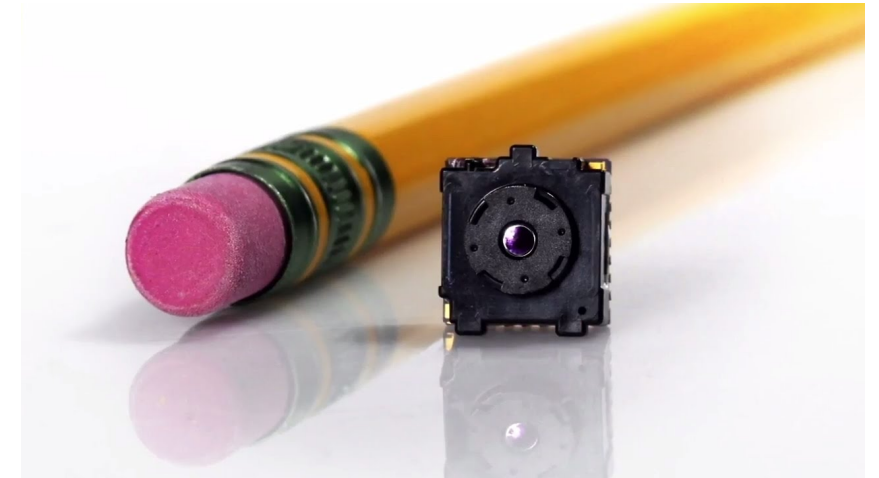
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*Motivation:* High-resolution long wave infrared (LWIR) cameras are expensive. The FLIR Lepton is a cheap LWIR camera module with limited resolution. In this work, we build a VIS+LWIR camera that uses image fusion to increase the resolution of the thermal image.

# Goal and Methodology

*Goal:* Build a VIS+LWIR camera and implement an efficient image fusion algorithm for real-time streaming of resolution-enhanced thermal images.

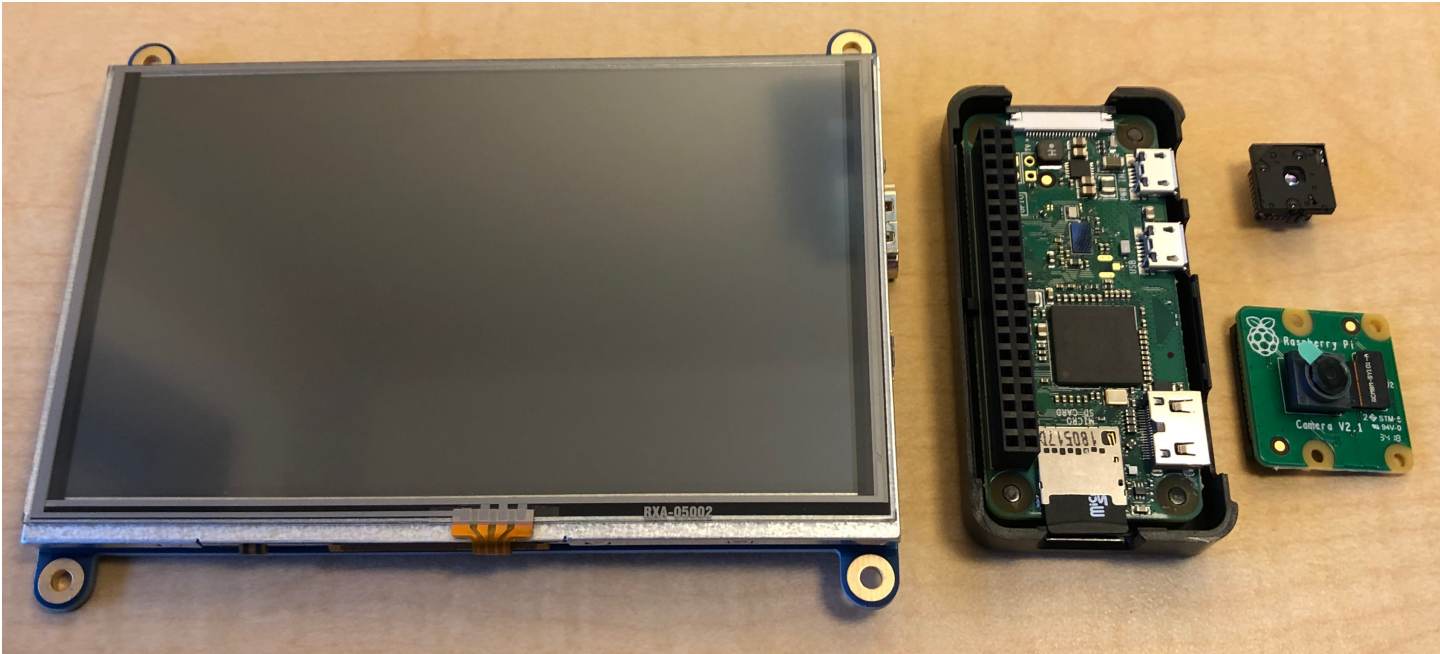


<https://www.flir.com/products/lepton/>

## *Plan*

1. Use a Raspberry Pi Zero W to build the camera with the FLIR Lepton and the Raspberry Pi Camera Module V2.
2. Compare and improve image fusion methods (e.g. Brovey, wavelet) on VIS+LWIR dataset. Downsample LWIR, original is ground truth.
3. Implement final algorithm on completed VIS+LWIR camera.

# Progress



- Parts were ordered and have arrived
- Found VIS+LWIR dataset to test algorithms
- Beginning code that interfaces cameras with Raspberry Pi



FLIR Thermal Starter Dataset  
<https://www.flir.com/oem/adas/adas-dataset-form/>