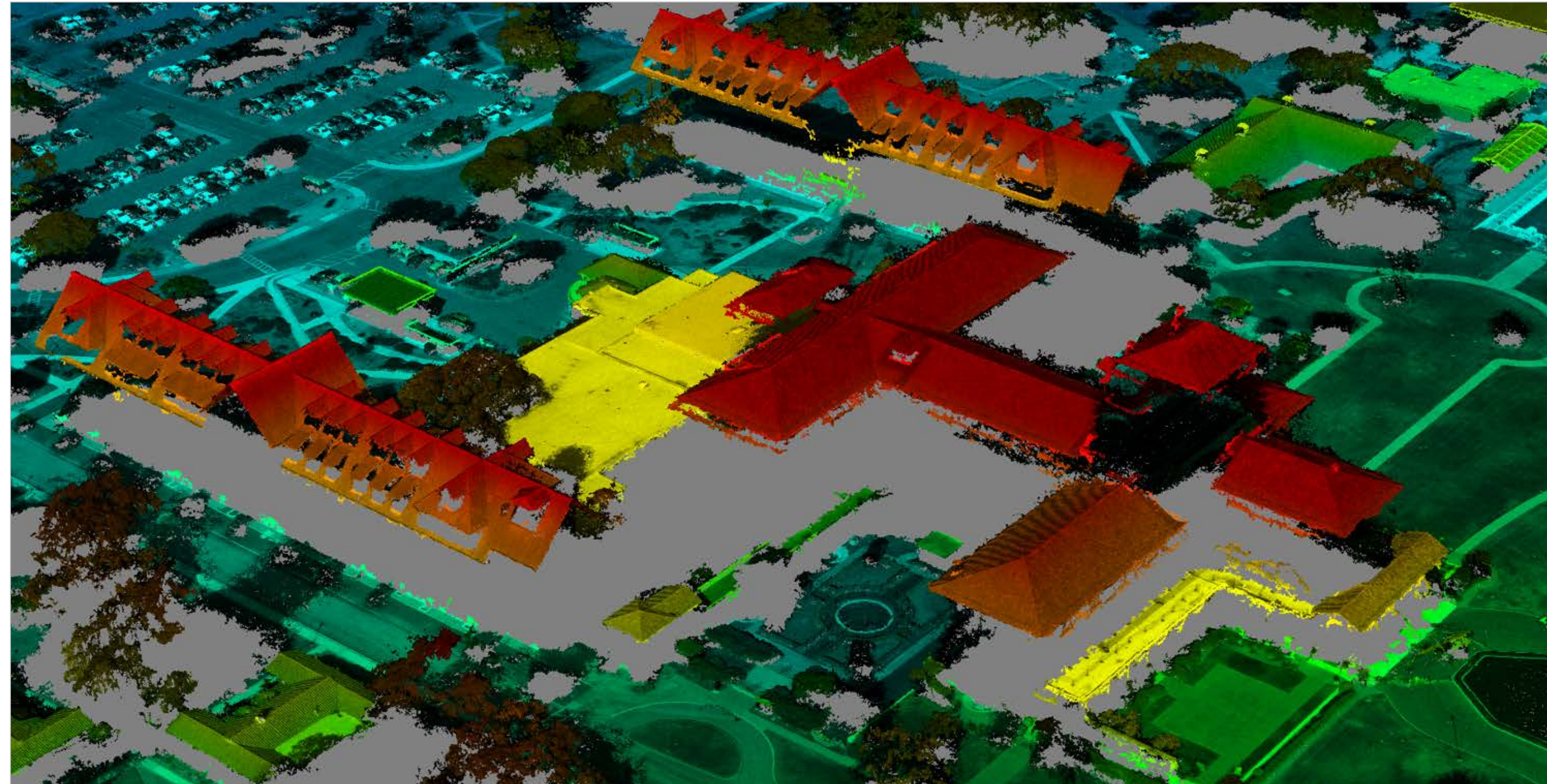


# Multi-Modal Sensor Fusion from Autonomous Platforms with 3D Modeling



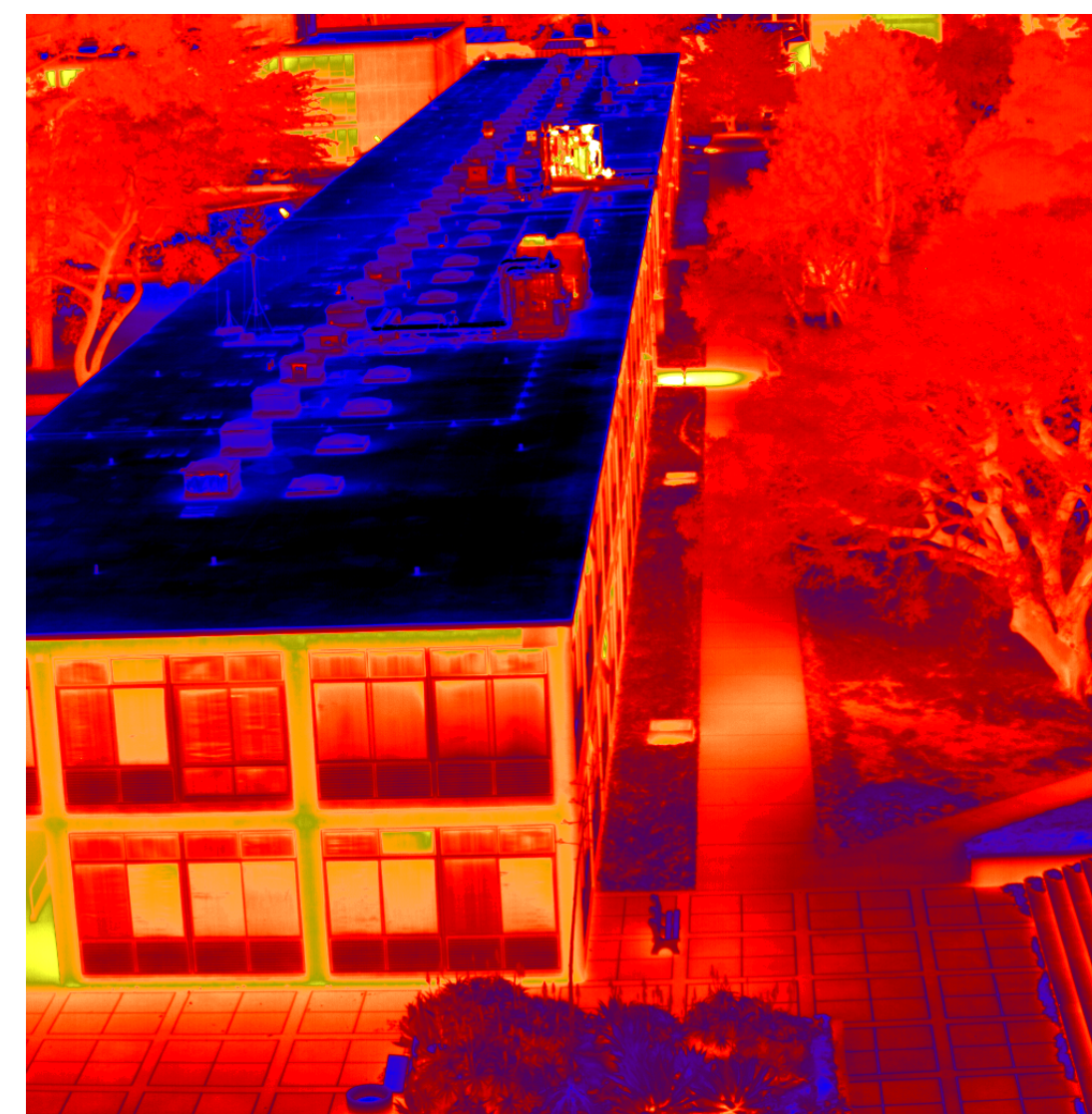
Naval  
Postgraduate  
School



*Point Cloud Model of the NPS campus*

- We are acquiring a UAV with LWIR camera, and propose to operate this over the campus. We may also operate at Fort Hunter Liggett (FHL), as part of some larger experiments.
- With data in hand, we have a number of commercial and open source software tools that can be applied to the LWIR and panchromatic (visible) data. The research process then will be to determine how best to bring the two together. Existing LiDAR data can be used to validate the photogrammetrically derived products from the UAV.

- The radical transformation in 3D mapping currently observed in visible sensors needs to be extending into the infrared, to establish night-time imaging and the ability to build 3D thermal models.
- Developing our ability to do 3D modeling in the LWIR will also further enable sensor fusion between different modalities.



- Topographic mapping is a fundamental requirement for expeditionary warfare. In discussion with special operations forces, it is apparent that they also have a need for this technology – particularly if it can be made fully organic, and the processing can be done in near real time (NRT).