## Detection & Tracking in Infrared (IR) Video

THE MOVES INSTITUTE
NAVAL POSTGRADUATE SCHOOL

As Thermal Infrared (IR) technology improves, it moves towards real-time video imagery and increasingly higher resolution. This creates a two-fold technology disparity between collection and analysis techniques. In the simplest form, the answer is two objectives with a single purpose: to develop algorithms for detecting and tracking very small targets in IR video.

### PROBLEM ANALYSIS

•Separate foreground (moving targets) from background (static components).

•Study and model the deconstruction of hi-res imagery to develop formula for artificially increasing image resolution.

•Develop or modify tracking algorithms for small objects (e.g., distant cars), even in the presence of occlusions.



Car moving – hi res

Detect the moving target

Deconstruct to reconstruct

Low res image
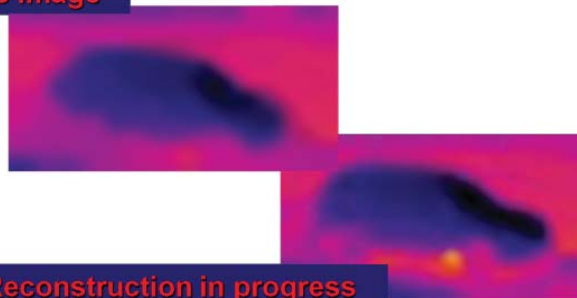
Reconstruction in progress

### APPROACH

•Probabilistic background modeling for detection

•Super-resolution Imaging

•Multi-target tracking

Good results here suggest the viability of detection and tracking using lower resolution cameras, lower quality optics, and increasing video to target distances.

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