

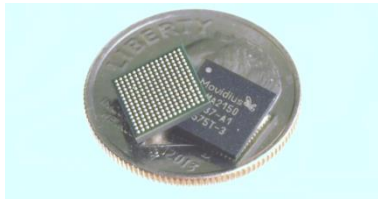
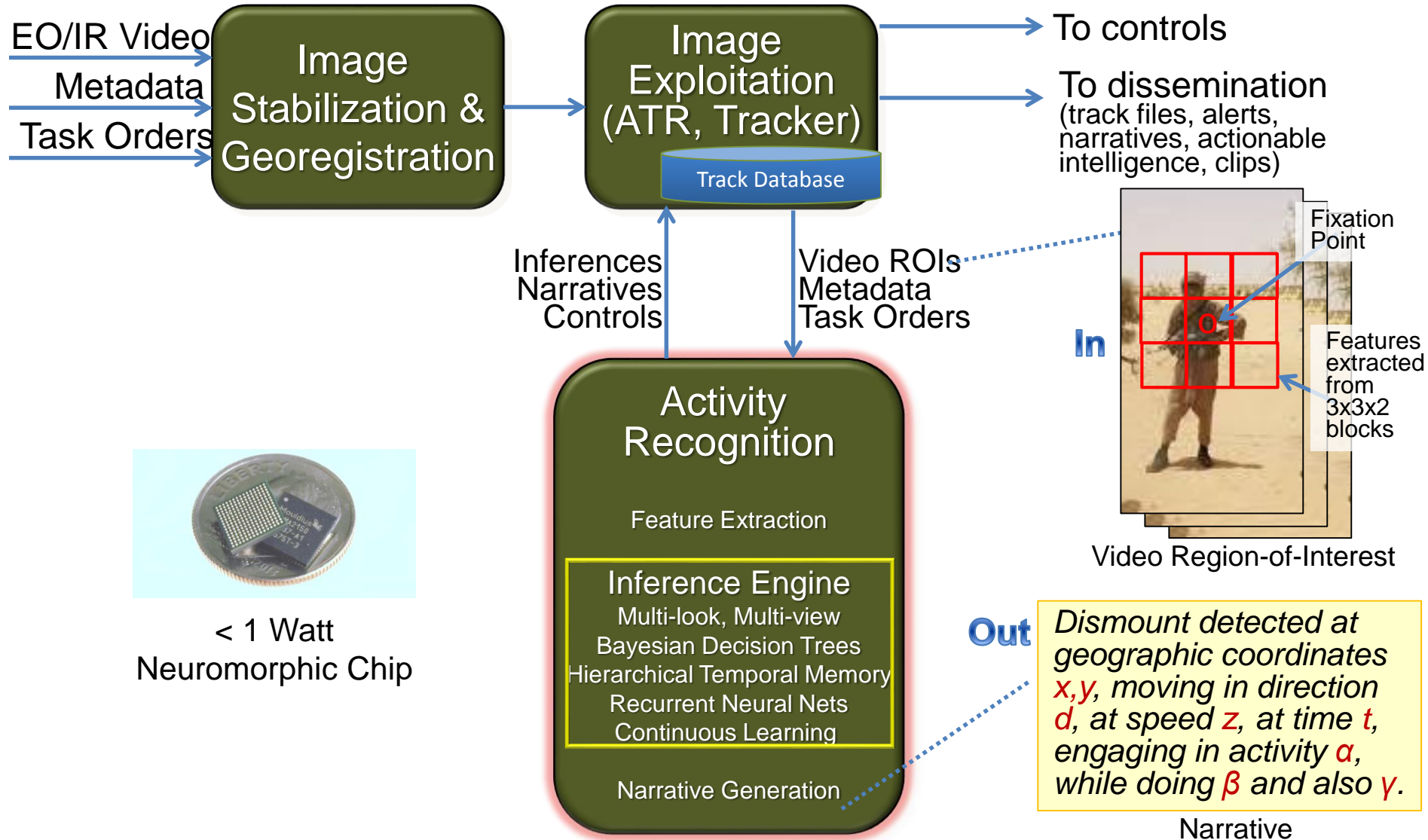
# Organization

- Company: Northrop Grumman
- Lead Investigator: Bruce Schachter
- Current Team Member: Small business (in negotiation)

## Particular Interests:

- Reconnaissance, Surveillance & Monitoring Systems
- Unattended Ground Systems (UGS)
- Smart Landmines (as per treaty obligations)
- Automatic Target Recognition (ATR) Systems (since 1968)
  - Dismount Identification Friend or Foe
  - Low SWaP processing on very small platforms with limited bandwidth data links
  - Cortical Processing: Optimized Neuromorphic Algorithms for Military Applications
  - Data Collections: Ground, Tower and Flight Tests (Visible bands, radar, mid and long wave infrared, ladar, multi-band)

# Research Areas of Interest



< 1 Watt  
Neuromorphic Chip

# Unique Qualifications

- ***40 Years Experience in Automatic Target Recognition***
- ***Hierarchical Topology***

- Meta-Estimator over multi-looks, multi-views, combining Bayesian Decision Trees,
- Each Bayesian Decision Tree is composed of Hierarchical Temporal Memory (HTM) modules,
- Each HTM module is composed of recurrent neural network (RNNs) blocks,
- Each RNN block is composed of 1st and 2nd order computational units and feedback loops.

- ***Stability + Plasticity + Knowledge Shielding*** – (1) environmental context, (2) what was just learned or learned over long duration, and (3) task orders received from controlling ground station.
- ***Native Handling of Spatiotemporal Data***
- ***Computational Efficiency***
- ***Complete Solution***: Human Activity Recognition: Action primitives, single actor, multi-actor

# Teaming

- Seeking team members with unique activity recognition paradigms that can be rapidly readied for competitive testing
- We can support other groups in:
  - Test and evaluation (lab blind testing, field testing)
  - Field data collection
  - Technology transition



## Contact Information

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