Simulated Use of Networked Satellites for Space Situational Awareness

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Tracking Satellites is Important for National Security

- Tracking satellites is a core component of Space Situational Awareness
- A constellation of autonomous small satellites would be able to quickly and accurately determine orbits and has advantage of decentralization
- Summer Goals:
  - Fix, update, and improve existing code
  - Implement a sensor scheduling strategy
Orbital Determination Strategy

• System Architecture
  • Satellites
  • Communication Channels (socket based)
  • Hub

• Algorithm
  • Observe
  • Determine
  • Filter
  • Broadcast
  • Receive & Incorporate

A simulated satellite streak
Next Steps

- Integrate a sensor scheduling strategy
  - Plan to implement Logothetis & Isaksson (1999)
    - Optimality of open-loop control for the sensor scheduling problem of linear Gauss Markov systems
  - Physical constraints may affect optimality
    - Solar occlusion
    - Earth occlusion
    - Earth’s shadow