

**AFRL FY14 Research Topic Template – DAGSI – AFIT - USAFA**

1. **Research Title: Information Fusion of Space Data**
2. **Individual Sponsor:**

Sponsor's Name: Vincent Schmidt, PhD  
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3. **Academic Area/Field and Education Level:** Computer Science/Computer Engineering (MS or PhD)
4. **Objectives:** The Battlespace Visualization Branch (711 HPW/RHCV) requires a diverse collection of ground-based satellite images for research involving space situational awareness (SSA) and visualization. The objective of this research is to develop and demonstrate a native (in-house) capability to directly collect, process, analyze, and display ground-based images of satellites and space phenomena. This data will be utilized as inputs into SSA and visualization research activities. The research involves the selection (or fabrication) and installation of an appropriate collection of imaging hardware, software, and computational components that will make up a research image collection and processing testbed. In addition to providing timely and applicable research data, funding the proposed research will greatly improve RHCV's ability to demonstrate the nature of the research cycle, from initial data collection, through processing and analysis, and into the SSA and visualization research products.
5. **Description:** Researcher will develop and evaluate techniques and algorithms for fusion of a variety of space data in support of Space Situational Awareness activities. Data may include multispectral images of a single space entity, multiple images of a single space entity taken over time, multiple images of a space entity taken at the same time from different locations, or similar instances. The results of this research will demonstrate practical mechanisms for visualizing fused space imagery. Imagery and non-image data may be collected using RHCV's newly installed 17" telescope, along with data from national or international research collaborators.
6. **Research Classification/Restrictions:** None
7. **Eligible Research Institutions:** Indicate to what organizations this topic should be provided. Check all that apply.
  - DAGSI                      PA Approval # and date: 88ABW-2013-3139, 3 Jul 13  
Topics submitted to DAGSI must be approved for public release.
  - AFIT (only)
  - USAFA (only)  
If you are submitting a topic for the USAFA, please indicate if you are also interested in sponsoring a USAF Cadet in summer of 2014 (Avg Cost for USAF Cadet for 33 days was \$5000)  
 Yes       No