

AFRL RESEARCH TOPIC CALL 2014

RY15-7

1. **Research Title:** "Video Indexing for Data Exploitation" (VINDEX)

2. **Individual Sponsor:** Dr. Michael L. Talbert,
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3. **Academic Area/Field and Education Level:** Computer Science (BS, MS, Ph.D.)

4. **Objectives:** Characterize tradespace of options for compressing petabyte archives of Wide Area Motion Imagery (WAMI) data, while retaining indexes to representations of significant events and activity history.

5. **Description:** We seek a video indexing capability to support access to and exploitation of highly compressed WAMI video archives (~1-5Hz frame rate). This may be expressed as any of a number of extensions to a default method of: a) automatically computing object track files and/or identifying significant events b) highly compressing the data, and c) using geographical and activity-based indexing schemes to link track-derived activities or events to compressed video segments.

For the present effort, we desire metrics to quantify and experimental excursions to illustrate the utility of track- and activity-derived indexes as access points into large WAMI data archives. Two complementary research goals are to be addressed. 1) Documentation of compression options to substantially reduce (~100X) the storage footprint of petabyte-scale archives of WAMI data, and 2) experimentation with multi-level/multi-resolution indexing schemes based on geography, tracks, events, or activities.

The Air Force Research Laboratory can supply representative data sets and a means to create track files for recording the movement of objects in the video. The means for and application of automatic detection of other significant events is left to the researcher or team to allow significant latitude in indexing options.

6. **Research Classification/Restrictions:** Access to, protection of and release-ability of the data and results will be governed ITAR restrictions and will be FOUO. It can be conducted at an unclassified or classified level depending on the clearance of the researcher(s). Other determining factors will be the classification of the data used and the potential utility of the results.

7. **Type of Student Desired:**

AFIT EE/CS MS/PhD student or team with up to SECRET clearance. DAGSI MS/PhD student or team (U.S. citizens). Academy student or team with up to SECRET clearance.

8. **Eligible Research Institutions:** *Place an X in all that apply.*

Universities (DAGSI & AFIT) AFIT (only) USAFA