



Lead Investigator: Thomas Koch, Ph.D
Dean of the College of Optical Sciences

Current Team Members:

College of Optical Sciences

- Matthew Kupinski
- Scott Tyo
- Amit Ashok
- Hong Hua
- Ron Liang

College of Engineering

- J. W. Rozenblit
- Mark Neifeld
- B. Ten Eyck
- Ali Bilgin



Research Interests

- Data mining, link and pattern analysis, predictive analytics
- Task-specific information theory
- Computational 3-D imaging
- Adaptive imaging based on task-specific information measures
- Optimal inferences based on partial information
- Machine learning and game theory
- Information-theoretic learning
- 3D displays and augmented virtual environments

Capabilities

- **Asymmetric Threat Response and Analysis Program (ATRAP)**
 - Named entity extraction and facilitated link assignment
 - Entity Dossier for at-a-glance details
 - Intelligence "gap finder"
 - Link Charts and social network analysis
 - Threat modeler to match intel with potential COAs
 - Interactive 3-D visualization of links and patterns
- **3-D shape reconstruction from 2D data**
 - Data not intended for use in 3D system
 - Works with limited information about the collection scenario
 - Different sensors with different properties at different times
- **Task-specific information theory**
 - Enables optimal solutions in sensing, detection/classification, estimation, and fusion
 - Extensive experience with applications of TSI and various single-sensor EO/IR systems (DARPA, ARO)
 - Optimal decision making with limited or partial information
 - JANUS will facilitate extension to multi-sensor heterogeneous data acquisition and inference
 - Adaptive methodologies guide future optimal acquisitions



Potential Collaborators

- We seek industry collaborators to provide:
 - Feature-extraction methods
 - Predictive analytics
 - Link and pattern generation
 - Machine learning



Contact Information

- Brian Ten Eyck
Director of Research Development
College of Engineering
The University of Arizona
Tucson, Arizona

(email) bteneveck@email.arizona.edu
(TEL) 520.626.6225
(url) <http://engineering.arizona.edu>
(url) <http://optics.arizona.edu>