

2021 Physics of Sensing Program Review

Dr. Michael Yakes | November 17-19, 2021 | Arlington, VA hybrid

Agenda Day 1 | Wednesday, November 17, 2021

Time	Topic	Speaker
7:45	Zoom Login	
8:00	Introductions	Michael Yakes, AFOSR
8:25	Advanced Orbit Prediction for Resident Space Objects Through Physics-based Learning	Xiaoli Bai, Rutgers University
8:50	Dynamical Issues in Space Domain Awareness	Daniel Scheeres, University of Colorado
9:15	BREAK	
9:30	Space Object Material Determination from Polarized Light Curves	John Crassidis, University at Buffalo - SUNY
9:55	Multi-Fidelity Methods to Track Maneuvering Space Objects	Brandon Jones, The University of Texas at Austin
10:20	Refinement and Validation of Radiation Pressure Models for High Area-To-Mass Ratio Space Objects	Moriba Jah, The University of Texas at Austin
10:45	BREAK	
11:00	Snapshot Hyperspectral Speckle Imaging	Stuart Jefferies, Georgia State University
11:25	Superior Wavefront Sensing Techniques for Space Situational Awareness	Mala Mateen, AFRL/RD
11:50	LUNCH	
1:00	Light Curve Inversion for Characterization of Objects with Concavities	Carolin Frueh, Purdue University
1:25	Accurate Space Weather Aging and Optical Characterization of Spacecraft Materials	Ryan Hoffman, AFRL/RV
1:50	Hyperspectral Non-Line-of-Sight Imaging: Toward Photorealistic Reconstruction	Andreas Velten
2:30	Optimal Sensor Tasking through Deep Reinforcement Learning for SSA	Richard Linares, MIT
2:55	Adaptive Data-Driven Actionable Intelligence for SSA in an Evidential Framework	Mrinal Kumar, Ohio State
3:20	Speaker Discussion	
4:00	MEETING ADJOURN FOR THE DAY	

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Agenda Day 2 | Thursday, November 18, 2021

Time	Topic	Speaker
8:45	Zoom Login	
9:00	Optical Imaging and Sensing in a Scattering Environment	Kevin Webb, Purdue University
9:25	Rotation, Shift and Scale Invariant Ultrafast Automatic Image Recognition (UAIR)	Selim Shariar, Northwestern
9:50	Measurement-Driven Improvements to Polarimetric, Grazing Angle, and Satellite BRDF Modeling	Sam Butler, AFIT
10:15	BREAK	
10:30	Profiling of Atmospheric Turbulence using Time-Lapse Imagery of Remote Targets from Multiple Spatially Separated Cameras	Santasri Bose-Pillai, AFIT
10:55	Passive Multi-dimensional Imaging and Recognition with Multiple Degrees of Freedom	Bahram Javidi, University of Connecticut
11:20	Non-imaging Advanced Scene Characterization	Nick Vamivakas, University of Rochester
11:45	LUNCH	
1:00	Imaging in Heterogeneous Media with the Noise Collector	Alexi Novikov, Penn State
1:25	Imaging Algorithm Designed to Enhance Detection of Dim Objects Resident with Brighter Ones	Steven Cain, AFIT
1:50	Effects of Non-Kolmogorov Turbulence and Aerosols on Optical Propagation through the Atmosphere	Andreas Muschinski, Northwest Research Associates
2:15	BREAK	
2:30	Statistical Comparison of Fractal and FFT Screens	Rao Gudimetla, AFRL/RD
2:55	Saturation Behaviors in Deep Turbulence	Jeremy Bos, Michigan Technological University
3:20	Speaker Discussion	
4:00	MEETING ADJOURN FOR THE DAY	

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Agenda Day 3 | Friday, November 19, 2021

Time	Topic	Speaker
7:45	Zoom Login	
8:00	Event-Based Cameras and their Potential Applications to Space Situational Awareness	Greg Cohen, Western Sydney University
8:25	Touchless Sensing of Electrostatic Potential and Material Characterization Using Neighboring Spacecraft	Hanspeter Schaub, University of Colorado
8:50	Signal Detection in Linearly Mixed Observations with Background Replacement	Julie Jackson, Air Force Institute of Technology
	BREAK	
9:30	Buffer-free Mechanical Release of Pyroelectric Single-crystalline Oxide Thin-films	Jeewan Kim, MIT
9:55	Remote Sensing via Multi-path Optical Interference of Reflected Light	Lauren Zarzar, Penn State
	BREAK	
10:35	Information Efficient Coherent Imaging using Photon-Counting Arrays	Maureen Syzmanski, AFRL/Rymm
11:00	3-D Nanomachining of Remote Sensors on Optical Fibers	Hengky Chandrahilim, Air Force Institute of Technology
11:25	Autonomous Distributed Angles-Only Orbit Determination using Multiple Observers	Simone D'Amico, Stanford University
11:50	Wrap-up	
12:00	Speaker Discussion	
12:40	MEETING ADJOURN	