

# 2024 AFOSR Dynamic Data and Information Processing Program Review

Dr. Erik Blasch | October 1-3, 2024 | Rome, NY - hybrid

Rome Research Site, 304 Brooks Road, Rome, NY 13441

The review will take place in the Innovare Center located at 592 Hangar Rd, Rome, NY 13441

Zoomgov: <https://www.zoomgov.com/j/1614786187?pwd=m4NO0Qwvng9GoUOR18CbszYREZfBHi.1>

Meeting ID: 161 478 6187

Passcode: 986715

Mobile +1-669-254-5252

## Agenda Day 1 | Tuesday, October 1, 2024

Time	Topic	Speaker
8:00-8:30	Login/Check-in	
8:30-9:00	Status of DDIP/DDDAS	Erik Blasch, AFOSR
9:00-9:30	Mathematical/Algorithmic Challenges for Fully Adaptive Radar	Murali Rangaswamy, AFRL
9:30-9:45	BREAK	
Session: Radar Awareness		
9:45-10:10	Data-Driven Improved Space-Time Adaptive Processing (STAP) Radar	Ali Pezeshki, CSU
10:10-10:35	Cumulant Generating Function Classifier for Radar	Kaushallya Adhikari, URI
10:35-11:00	Physics-Aware ML for Cognitive RF Sensing	Sevgi Gurbuz, U-AL
11:00-11:55	LUNCH	
Session: Position Awareness		
11:55-12:20	Cognitive Algorithms for Sensing, Navigation, and Adaptive	Alex Stringer, SWES
12:20-12:45	Secure Joint Sensing and Communications via Random Sequence Encoding	Dmitriy Garmatyuk, Miami-OH
12:45-13:10	Adaptive High Dimensional Data Fusion and Sensing for Dynamic Target Detect	Ruixin Niu, VCU
13:10-13:25	BREAK	
Session: Object Awareness		
13:25-13:50	Certifiable and Self-Supervised Category-Level Tracking	Luca Carlone, MIT

13:50-14:15	Distributed-Aperture WAMI Using a Collective of Small UAVs	Hadi Ali Akbarpour, U-Missouri
14:15-14:40	Cognitive Sensing, Perception, Autonomy, and Navigation	Zak Kassas, OSU
14:40-14:55	BREAK	
Session: Networking		
14:55-15:20	Resilient Autonomous Air and Space Systems	Alvaro Cardenas, UC - SC
15:20-15:45	FogML: Intelligence Orchestration over Contested Fog Learning Environments	Christopher Brinton, Purdue
15:45-16:10	MEMS Airflow Sensors for UAV Control in Extreme Wind	Anirudha Majumdar, Princeton
16:10-16:25	BREAK	
16:25-16:40	DDIP Summary	Erik Blasch, AFOSR

Agenda Day 2   Wednesday, October 2, 2024		
Time	Topic	Speaker
8:00-8:15	Login/Check-in	
8:15-8:30	Status of DDIP/DDDAS	Erik Blasch, AFOSR
8:30-9:00	Data Fusion For Mixed Modality Microstructure Characterization	John Wertz, AFRL/RX
9:00-9:15	BREAK	
Session: Materials Awareness		
9:15-9:40	Data Fusion for Self-Sensing Additively Manufactured Polymer Matrix Composite	Tyler Tallman, Purdue
9:40-10:05	Context-Aware Hybrid Learning for Real-Time Estimation of Uncertain Systems	Simon Laflamme, Iowa St
10:05-10:30	Real-time Model Updating for Structures in Shock Environments	Austin Downey, USCarolina
10:30-10:55	Fusion of Scanning Acoustic Microscopy and Eddy Current Images	Nathan Gaw, AFIT
10:55-11:55	LUNCH	

Session: Space Awareness		
11:55-12:20	Reliable Efficient and Adaptive Learning with Attention	Andreas Savakis, RIT
12:20-12:45	Adaptive, Intelligent Digital Twins to Enable In-Space Service, Assembly, and Manufacturing	Angel Flores-Abad, UTEP
12:45-13:10	Physics-Enhanced Deep Learning of Dynamic Behavior of Space Robotic Systems	Ou Ma, UCinn
13:10-13:25	BREAK	
Session: Space Awareness		
13:25-13:50	Cooperative Tracking of Evasive Resident Space Objects in the Cislunar Space	Raktim Bhattacharya, TxA&M
13:50-14:15	Intelligent Observing Uncooperative Space Objects	Xiaoli Bai, Rutgers
14:15-14:40	Uncertainty Quantification in Cislunar Space Domain Awareness	Tarek Elgohary, UCF
14:40-14:55	BREAK	
Session: Space Awareness		
14:55-15:20	Building Dynamic Surrogate Models for In-Space Propulsion Devices	Adrian Wong, AFRL, CTR
15:20-15:45	Multi-Phenomenological SDA and XDA Decision Support	Marcus Holzinger, Ucol
15:45-16:10	Risk Analyses of Conjunction Data Messages	Bryan Little, AFIT
16:10-16:25	BREAK	
Session: Cyber Physical Systems		
16:25-16:50	Human-aware probabilistic logic approach for learning	Sriraam Natarajan, UT -Dallas
16:50-17:15	Multi-Agent SituationalAwareness and Inference through Physics-informed AI	Javad Mohammadi, Utxas8
17:15-17:30	BREAK	
17:30	DDIP Summary	Erik Blasch, AFOSR

Agenda Day 3   Thursday, October 3, 2024		
Time	Topic	Speaker
8:00-8:15	Login/Check-in	
8:15-8:45	Status of DDIP/DDDAS	Erik Blasch, AFOSR
8:45-9:15	Battle management Yielding Security Through All-Network Domain	Paul Shrader, AFRL/RI
9:15-9:30	BREAK	
Session: Sensor Systems		
9:30-9:55	Cyber/sensing Topological Data Analysis	Joshua Leiter, NWIC
9:55-10:20	Efficient, Robust and Explainable multi-modal sensing	Jie Wei, CCNY
10:20-10:45	Imaging and Communication Surveillance as an Edge Service	Yu Chen, Binghamton
10:45-11:44	LUNCH	
Session: Sensor Systems		
11:44-12:09	Predictive Digital Twins at Scale for Space Systems	Karen Willcox, U-Texas
12:09-12:34	Multimodal Attention-Based DL for Activity Recognition at the Edge	Arslan Munir, KSU
12:34-12:59	DDDAS-AI for Modeling, Prediction and Decisions in Interacting Dynamical Systems	Dimitris Metaxas, Rutgers
12:59-13:15	BREAK	
Session: Sensor Awareness		
13:15-13:40	Sparse, Compressed, and Distributed Array Processing	Yimin Zhang, Temple
13:40-14:05	Dynamic Deep Learning Rollout Sensing and Processing for Interpretability	Vishal Monga, PSU
14:05-14:30	Deep Learning Twin for DDDAS Monitoring for Cyber-physical Systems	Yang Weng, ASU
14:30-14:45	BREAK	
Session: Distributed Awareness		
14:45-15:10	Building Dynamic Data-Driven Surrogate Models for In-Space Propulsion Devices	Ngwe Thawdar, AFRL/RI
15:10-15:35	Assured Wireless Operations Through Open Radio Access Systems	Francesco Restuccia, Northeastern

15:35-16:00	Physics-based GAN Architectures for RF-based Machine Learning	Eduardo Pasiliao, AFRL/RW
16:00-16:15	BREAK	
Session: Human Awareness		
16:15-16:40	Multimodal Neurosymbolic Robust Complex Event Detection	Mani Srivastava, UCLA
16:40-17:05		
17:05-17:20	BREAK	
17:20	DDIP Summary	Erik Blasch, AFOSR

#### Working Groups

Cognitive Radar

Object Assessment

Materials Awareness

Sensing and Communication

Cyber Physical Sensing

High Rate Structural WG

Neurosymbolic Processing

Space Situational Awareness

Space Movement

[Murali Rangaswamy](#)

[Oliver Nina](#)

[John Wertz](#)

[Ngwe Thawdar](#)

[Alex Aved](#)

[Jacob Dodson](#)

[Erik Blasch](#)

[Erik Blasch](#)

[Eckhardt/Koo](#)

RY

RY

RX

RI

RI

RW

AFRL(RH)

AFRL(RV)

RQ