



# 5th Annual Meeting of the AFRL Mathematical Modeling and Optimization Institute

MEETING PROGRAM



University of Florida  
Research & Engineering Education Facility (REEF)  
Shalimar, FL  
August 1–3, 2017

# Meeting Information

## Registration

Registration is free and all meeting attendees must register. **All presenters have been automatically registered.** Non-presenting attendees can register by emailing the organizers at [mmo.meeting.2017@gmail.com](mailto:mmo.meeting.2017@gmail.com) with your name and affiliation or stopping by the registration desk on-site. Registration material can be picked up on Tuesday–Thursday 8:30am–4:15pm in the UF-REEF lobby.

## Coffee Breaks

Coffee breaks will be held at 9:45–10:00am and 2:30–2:45pm daily in the UF-REEF lobby.

## Luncheon

Lunch will be provided to the registered meeting attendees from 11:30am–1:00pm daily in the UF-REEF lobby.

## Internet Access

Internet access is available free of charge.  
Network SSID: ufguest

## Meeting Rooms

Sessions A and B - Auditorium  
Sessions C1 and D1 - Auditorium  
Sessions C2 and D2 - Room 117

# Tuesday, August 1

**9:00 Opening Remarks (Auditorium)**

**9:00-9:45 Plenary Session A (Auditorium)**

*Sequential Max-Min Bilevel Linear Programming with Incomplete Information and Learning*

Oleg A. Prokopyev, Professor, University of Pittsburgh

**9:45-10:00 Coffee Break**

**10:00-11:30 Session B (Auditorium)**

*The Bilevel Quadratic Knapsack Problem*

Gabriel Zenarosa, University of North Carolina, Charlotte

*Thermo-structural Modeling and Simulation of High Speed Micro-Rotating Structures*

David Veazie, Kennesaw State University

*Deformation of Metallic Materials During Dynamic Events*

Benoit Revil-Baudard, University of Florida

**11:30-1:00 Luncheon**

**1:00-2:30 Session C1 (Auditorium)**

*Micromechanical Modeling of Ti/TiB Composites: Effects of TiB Whisker Orientation and Distribution on the Overall Properties*

Phillip Deierling, NRC

*Verification and Validation of a Re-entry Ablation Model for PICA Using ABAQUS*

Yeqing Wang, University of Florida

*New Approach for Describing Meso-scale Effects on Structural Behavior*

Nitin Chandola, University of Florida

*Thermal Degradation of Polymer Matrix Composites at Elevated Temperatures*

Teja Konduri, University of Arizona

## 1:00-2:30 Session C2 (Room 117)

*Single Scene and Path Reconstruction of Moving and Stationary Objects Using a Moving Monocular Camera*

Zachary Bell, University of Florida

*Data-Based Approximate Optimal Regulation with Unknown Parameters and Control Fault*

Patryk Deptula, University of Florida

*Camera Pose Estimation Using Quaternions*

Kaveh Fathian, University of Texas, Dallas

*Runway Inspection using Multiple Quadrotor UAVs*

William Warke, University of Texas, Dallas

## 2:30-2:45 Coffee Break

## 2:45-4:15 Session D1 (Auditorium)

*High Speed Fluid-Thermal-Structural Interactions and Reduced Order Modeling*

Emily Dreyer, Ohio State University

*Unsteady Fluid-Structure-Jet Interactions of Agile High-Speed Vehicles*

Ryan Kitson, University of Michigan

*Thin Cylinder Structural and Aerodynamic Modeling*

James Clinton, Georgia Institute of Technology & John Moran IV, California State University, Chico

*Towards the Design of Optimal Trajectories on Reduced Dimensional Manifolds*

Michael Sparapany, Purdue University

## 2:45-4:15 Session D2 (Room 117)

*Health Monitoring of Autonomous Systems under Uncertain Initial Conditions*

Alejandro White, North Carolina A&T University

*Control of Human-in-the-Loop Systems with Input Delay*

Mackenzie Matthews, North Carolina A&T University

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*An Inexpensive Ground Vehicle Platform for Formation Control, Formation Monitoring, and Camera Pose*

Landen Blackburn, University of Utah & Valentina Catanho, University of Florida

*Inter-Vehicular Video Quality Assessment via EXata Emulations*

Debashri Roy, University of Central Florida

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# Wednesday, August 2

## 9:00-9:45 Plenary Session A (Auditorium)

*Cyber Attacks in Online Social Networks through Socialbots*  
My T. Thai, Professor, University of Florida

## 9:45-10:00 Coffee Break

## 10:00-11:30 Session B (Auditorium)

*Network Analysis of Social Media Portal VK.com*  
Vladimir Boginski, University of Central Florida

*Analysis of Dynamics of Blockchain Peer-to-Peer Network Topologies*  
Alexander Semenov, University of Jyväskylä, Finland

*Exact Algorithms on Reliable Routing Problems under Uncertain Topology Using Aggregation Techniques for Exponentially Many Scenarios*  
Qipeng “Phil” Zheng, University of Central Florida

## 11:30-1:00 Luncheon

## 1:00-2:30 Session C1 (Auditorium)

*Hybrid State Estimation Applied to Adversarial Team Monitoring*  
Michael McCourt, University of Florida

*Sensor Compromise Detection in Multi-Target Tracking Systems*  
J. Pablo Ramirez-Paredes, University of Florida

*Landmark Identification Using Magnetic Fingerprints*  
Grant Huang, University of Florida

*Bioinspired Magnetic Navigation Using Magnetic Waypoints*  
Brian K. Taylor, AFRL

**1:00-2:30 Session C2 (Room 117)**

*Community Detection in a Temporal Network*

Jongeun Kim, University of Florida

*Vulnerability of Interdependent Networks Under Heterogeneous, Multi-Timescale Cascade*

Tianyi Pan, University of Florida

*Parameter Inference for Optimal Decentralized Network Formation using a Continuous-Time Actor-Oriented Model*

Abhinav Perla, University at Buffalo

*Stochastic Programming for Facility Location Problem with Lagrangian Relaxation and Sub-gradient Method*

Mengnan Chen, University of Central Florida

**2:30-2:45 Coffee Break**

**2:45-4:15 Session D1 (Auditorium)**

*Interferometric Enhancement for Forward-Looking Synthetic Aperture Radar Target Imaging*

Matthew Burfeindt, AFRL

*Nonlinear Adaptive Control of an Air-to-Air Missile Using Closed-Loop Reference Models*

James Cloutier, AFRL

*On a Calibration of a Reaction Rate Model for Explosive by a DSD-informed Method*

Sunhee Yoo, AFRL

*Distributed Stochastic Gradient Descent for Big Data Analytics*

Liqiang Wang, University of Central Florida

# Thursday, August 3

## 9:00-9:45 Plenary Session A (Auditorium)

*An Introduction to Recurrent Neural Networks and Reinforcement Learning*  
Adrian Barbu, Associate Professor, Florida State University

## 9:45-10:00 Coffee Break

## 10:00-11:30 Session B (Auditorium)

*Cascade Prediction in Social Networks via Euclidean Embedding*  
Wondi Geremew, Stockton University

*Integrated Network Flows Optimization and Scheduling in Time-expanded Layered Networks with Applications to the Health Internet-of-Things*  
Alla Kammerdiner, New Mexico State University

*Acceptable Risks and Related Decision Problems with Multiple Risk-averse Agents*  
Getachew Befekadu, NRC & University of Florida

## 11:30-1:00 Luncheon

## 1:00-1:45 Plenary Session C (Auditorium)

*Networks (and Data Science) in Brain Research*  
Panos M. Pardalos, Distinguished Professor, University of Florida

## 1:45-2:00 Coffee Break

## 2:00-3:30 Session D1 (Auditorium)

*RSSI-Based Supervised Learning for Uncooperative Direction-Finding*  
Tathagata Mukherjee, Intelligent Robotics



*Hierarchical Learning For FM Radio Based Aerial Localization Using RSSI*  
Andreas Adolfson, Intelligent Robotics

*Image Based Localization Using Deep Learning & Compound-Eye Approach*  
Orhan Akal, Florida State University

*Video Streaming over SDR for Enhanced QoE: From Theory to Practice*  
Debashri Roy, University of Central Florida

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