

Conference on Cooperative Control and Optimization

December 4–6, 2002

CENTER FOR APPLIED OPTIMIZATION, UNIVERSITY OF FLORIDA
AND AIR FORCE RESEARCH LABORATORY

University of Florida Hotel & Conference Center
Gainesville, FL

Organizers: Robert Murphey (murphey@eglin.af.mil)
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Sergiy Butenko (butenko@ufl.edu)

PROGRAM

Tuesday, December 3, 2002

4:00–6:00 pm **Registration**
Conference Registration Desk

Wednesday, December 4, 2002

8:30 am–1:00 pm Registration, Conference Registration Desk

Session W.1 Chairman: Panos Pardalos
Century B

8:40 Opening Remarks from Conference Organizers

8:45 Welcome from Dr. Pramod Khargonekar,
Dean of the University of Florida College of Engineering

9:00 D. Jacques and M. Pachter
A Theory of Cooperative Search, Classification, and Target Attack

9:30 Gokhan Inalhan, Dusan Stipanovic and Claire Tomlin
Optimality, Duality and Complexity in Decentralized Optimization and Control

10:00 P. S. Krishnaprasad
Moving Frames, Steering Laws and Formations

10:30 –10:50 **Break**, Break Pavillion

Wednesday, November 4, 2002

Session W.2

Chairman: Robert Murphey

Century B

10:50

Rajvignesh Thogulua, Deniz Erdogmus, Jose C. Principe

Self-Organization of Multiple-Agents Using Information Theoretic Interactions

11:20

Henry L. Pfister

Cooperative Control of Multiple Vehicle Area Search with a Fuzzy Map

11:50

Umit Yusuf Ogras and Umit Ozguner

Cooperative Search Strategies for Multi-Vehicle Teams

12:20-1:50

Lunch

Session W.3

Chairman: Sergiy Butenko

Century B

1:50

C.R. Ashokkumar, Will J. Curtis, Robert Murphey and Robert Sierkowski

Invariant Interconnected Systems in Null Space

2:20

Shankar K. Subramanian, Jose B. Cruz, Phillip R. Chandler, Meir Pachter

Modeling Persistent Area Denial As a Partially Observable Markov Multi-Agent Game Problem

2:50

Myungsoo Jun

Probability Map Building of Uncertain Dynamic Environments with Indistinguishable Obstacles

3:20-3:40

Break, Break Pavillion

Wednesday, December 4, 2002

Session W.4 Chairman: Panos Pardalos
Century B

- 3:40 Theju Maddula, Ali A. Minai, Marios M. Polycarpou
Multi-Target Assignment and Path Planning for Groups of UAVs
- 4:10 Timothy Horiuchi
Mimicking Bat Echolocation for Low-Level Flight Control
- 4:40 Rob Murphey, Panos Pardalos, Stanislav Uryasev, Michael Zabaranin
Analytical and Discrete Optimization Approaches in Optimal Trajectory Generation
- 7:00 **Banquet Dinner**, Hickory

Thursday, December 5, 2002

Session T.1 Chairman: Panos Pardalos
Century B

8:00 am–1:00 pm Registration, Conference Registration Desk

8:30 Ali Ahmadzadeh, Bijan Sayyar-Roudsari, Abdollah Homaifar
A Hybrid Evolutionary-Gradient Search Approach to Capacitated Multi-Source Multi-UAV Scheduling with Time Windows

9:00 Tim Chung, Lars Cremean, William B. Dunbar, Zhipu Jin, Eric Klavins, David Moore, Richard Murray, Abhishek Tiwari, Dave van Gogh, Stephen Waydo
A Platform for Cooperative and Coordinated Control of Multiple Vehicles: The Caltech Multi-Vehicle Wireless Testbed

9:30 Jeffery R. Layne, Martin J. Eilders, Zaher M. Kassas, Umit Ozguner
A Hospitality Map Approach for Estimating a Mobile Target Location

10:00 –10:30 **Break**, Break Pavillion

Session T.2 Chairman: Sergiy Butenko
Century B

10:30 J. Willard Curtis
Cooperative Instability: The Churning Effect and Its Causes

11:00 Sriram Ganapathy and Kevin M. Passino
Modeling and Scalability Analysis of Cooperative Control Strategies

11:30 **Open Discussion: Future Direction of Cooperative Control**
led by Robert Murphey

12:00-1:30 **Lunch**

Thursday, December 5, 2002

Session T.3

Chairman: Robert Murphey

Century B

1:30

Ron Mahler

Sensor Management Based on Approximate Maximization of the RMS Posterior Expected Number of Targets

2:00

Vishwesh Kulkarni, Durgaprasad Shamain, Laurence Milstein

Effect of Communication Constraints on Multi-Agent Cooperation

2:30

Jonathan How

Receding Horizon Control of Multiple UAVs

3:00 – 3:30

Break, Break Pavillion

Session T.4

Chairman: Panos Pardalos

3:30

George Barbastathis

Progress in Volume Holographic Telescopes: Cooperative Imaging with Multiple Sensing Agents, Using Laser Illumination or Sunlight

4:00

Daniel E. Marthaler

Collective Motion Algorithms for Determining Environmental Boundaries

4:30

Panos M. Pardalos, Vitaliy A. Yatsenko, Don Grundle

Nonlinear Dynamics of Sea Clutters and Detection of Small Targets

7:00

Conference Dinner, Hickory

Friday, December 6, 2002

Session F.1

Chairman: Panos Pardalos

Azalea

9:00

Atif I. Chaudhry

Parameterization of Unmanned Vehicle Traits and Capabilities for Testbed Use

9:30

Yan Jin, Marios M. Polycarpou, Ali A. Minai

Cooperative Real-Time Task Allocation Among Groups of UAVs

10:00

Kendall E. Nygard, Michael J. Hennebry, Ahmed Kamel

An Integer Programming Model for UAV Sub-team Formation

10:30-11:00

Break, Break Pavillion

Session F.2

Chairman: Robert Murphey

Azalea

11:00

Pavlo Krokhmal, Robert Murphey, Stanislav Uryasev

Use of Conditional Value-at-Risk in Stochastic Problems with Uncertainties in Distributions

11:30

Eduardo Pasilliao

Branch and Bound Algorithms for the Multidimensional Assignment Problem

12:00

Vladimir Bugera

Two Travelling Salesmen Problem and Applications

12:30

Closing Remarks