

Quantitative Methods in Defense and National Security

April 30 – May 1, 2012
Program



	Monday, April 30	
0730–0900	Registration	
0900–1000	Keynote The Cinema Steve Anderson Data Farming and the Exploration of Inter-Agency, Inter-Disciplinary and International “What if?” Questions	
1000–1030	Break	
	Dewberry Hall	
1030–1200	Old and New Equipment Design, Development, Testing, Fielding Organizer/ Chair Carolyn Carroll	Quantitative Horizon Scanning Jeffrey Solka
	1. Frederica Darema TBD 2. Laura Freeman Current Model of Design, Development, Test, Field 3. Carolyn Carroll Emerging Multi-Modal Dynamically Reconfigurable, Adaptive Hardware- Software Components and Systems	1. Jeffrey Solka An Overview of Some Recent Work in Pre-emergence Prediction 2. Bob Abercrombie A Study of Scientometric Methods to Identify Emerging Technologies via Modeling of Milestones 3. Bill Ladd Large Scale Text Analytics
1200–1300	Lunch (on your own)	

Monday, April 30		
1300–1430 Organizer/ Chair	High Dimensional Data Analysis Matthew Fickus	Topic Models Jeffrey Solka
	1. Yue Lu Spatiotemporal sampling of diffusion processes on large meshes and networks 2. Mauro Maggioni Multiscale Geometric Methods for Noisy Point Clouds in High Dimensions 3. Bernhard Bodmann Robust Distributed Processing with Random Fusion Frames	1. Theodore Allen Subject Matter Expert Refined Topic Models 2. David Marchette Inferential Variability in Topic Models 3. Sam Blasiak A Hidden Markov Model Variant for Sequence Classification
1430–1500	Break	
1500–1630 Organizer/ Chair	Waveform Design Matthew Fickus	Quantitative Modeling & Simulation I Alan Thomas
	1. John Benedetto Orthogonal matching pursuit number theoretic sparsity equations 2. Ali Pezeski Coordinating Complementary Waveforms in MIMO Radar 3. Radu Balan Polynomial embeddings for quadratic algebraic equations	1. Rebecca Douglas Modular, Multi-fidelity Framework for Sea Defense Simulation 2. Santiago Robinson Large-Scale Systems of Systems Modeling and Simulation Using Graph Theory 3. Andrew Turner Measures of Statistical Output for Stochastic Simulations
1630–1800 Organizer/ Chair	Quantitative Systems Analysis I Alan Thomas	Contributed I
	1. Andrew Loerch Adaptive Adversary Modeling in Asymmetric Warfare using the Threat Plan Prediction (TPP) Model 2. Eileen McConkie Mathematical Properties of System Readiness Levels 3. Jamie Macbeth Vehicle vs. Task-based UAV Control Paradigms	1. Michael Cohen An Update on Two Recent CNSTAT Studies on Defense Test and Acquisition 2. Matthew Schneider An Application of Differentially Private Linear Mixed Modeling 3. Amir Bagherpour Stability and Instability: Applying Agent based Modeling to predict Political Outcomes of the Arab Spring 4. Ionnis Schizas Distributed Threat Localization via Sparsity-Cognizant Matrix Decomposition

Tuesday, May 1			
0730–0830	Registration		
	Dewberry Hall	F, Third Floor	G, Third Floor
0830–1000	Frame Theory	Criminal Site Selection	Personnel Retention and Assessment
Organizer/ Chair	Mathew Fickus	Michael Porter	
	<p>1. Dustin Mixon Full spark frames</p> <p>2. Waheed Bajwa Sure Independence Screening For High-Dimensional Feature Space: A Frame Theoretic Analysis</p> <p>3. Peter Casazza Spectral Tetris Fusion Frame Constructions</p>	<p>1. Mike O’Leary Models for Offender Target Location Selection with Explicit Dependency Structures</p> <p>2. Michael Porter Weighted Kernel Density for Predicting the Location of the Next Event in a Series</p> <p>3. Vasanthan Raghavan Modeling and Detection of Sudden Spurts in the Activity Profile of Terrorist Groups</p>	<p>1. Lauren Malone Waivered Recruits: An Evaluation of their Performance and Attrition Risk</p> <p>2. Molly McIntosh Additional Evidence of the Effectiveness of SDIP</p> <p>3. Yevgeniya Pinelis The Navy Officer Lateral Transfer Process and Retention: A Matched Analysis</p>
1000–1030	Break		
1030–1200	Imaging	Quantitative Systems Analysis II	Uncertainty Quantification
Organizer/ Chair	Matthew Fickus	Alan Thomas	Leslie Moore
	<p>1. John Greer Compressive Sensing of Hyperspectral Images</p> <p>2. Vivek Goyal Compressive Depth Acquisition Cameras: Principles and Demonstrations</p> <p>3. Wojciech Czaja Multi-dimensional Shearlets and Applications</p>	<p>1. Nick Molino Information Theory and Thermodynamic Exergy Methods Applied to Network-Centric Mine Countermeasure Operations</p> <p>2. Brandon Behlendorf MOdeling Situational Dymaics of Maritime Piracy</p> <p>3. Alan Thomas Analysis of Colored Petri Net-based Systems Models</p>	<p>1. Joanne Wendelberger Agent-Based Approach for Modeling Education</p> <p>2. Leslie Moore Comparing Mitigations Under Uncertainty in a Simulated Influenza Outbreak</p> <p>3. Charles Tong Uncertainty Quantification Methods and Software for Engineering Systems</p>
1200–1300	Lunch (on your own)		

Tuesday, May 1			
1300–1430	Quantitative Modeling & Simulation II	Low Cost Sensor Alternatives for Harbor & Litoral Areas I	Contributed II
Organizer/ Chair	Alan Thomas	Carolyn Carroll	
	<ol style="list-style-type: none"> 1. Walter Powell Real Time Decision Support Using Simultaneous Parallel Distributed DEVS Simulations 2. Gabor Karsai Model-based Integration of Heterogeneous Simulations 3. Alexander H. Levis Multi-Modeling for Course of Action Simulation 	<ol style="list-style-type: none"> 1. Dairo Abayomi Acoustic Communication Modem 2. Suresh Regmi Analysis of Advanced Methods for Decision-Making with Underwater Sensors 3. Hadis Dashestani Sensor Planning and Optimum Sensor Locations Based on Information Functions 	<ol style="list-style-type: none"> 1. Vasileios Maroulas Improving Multi-Target Tracking via Particle Filters 2. Theodore Allen Statistics and Optimization Methods for Known Cyber Vulnerability Maintenance 3. John Nolan Nonlinear Signal Processing in Impulsive Noise Environments
1430–1500	Break		
1500–1630	Data Farming	Low Cost Sensors II	Networks
Organizer/ Chair	Susan Sanchez	Carolyn Carroll	Michael Porter
	<ol style="list-style-type: none"> 1. Sanchez Data Farming: Designing and Conducting Large-Scale Simulation Experiments 2. Alejandro Hernandez Approaching Dimension-Free Construction of Nearly Orthogonal Latin-Hypercubes 3. Mary McDonald Case Study: Improving Analysis with the Joint Strike Fighter Program Office Integrated Training Center (ITC) Model 	<ol style="list-style-type: none"> 1. Paul Cotae Research on Underwater Sensor Networks 2. Roland Kamden Threshold Based Stochastic Resonance Memoryless Channels 3. Carolyn Carroll Discussant 	<ol style="list-style-type: none"> 1. James Ferry Probabilistic Community Detection on Networks 2. Patrick O’Neill Event Based Community Detection for Networks