Conference Program

Monday, June 28

	Room 32-123
9:00-9:10	Brian Williams Welcome to Computational Sustainability
	Earth Ecosystem and Computational Modeling Session Chair Youssef Marzouk
9:10-9:40	Susan Avery Charting the Future Through an Ocean of Data
9:40-10:10	Carl Wunsch Methodological Requirements for Estimating Climate Change
10:10-10:40	Anna Michalak Towards a Global Carbon Monitoring System: Assimilating Environmental Data in a Geostatistical Framework
10:40-11:00	*Break*
11:00-11:20	Youssef Marzouk Statistical Inference for Physical Models of Energy Systems
	Conservation Modeling Session Chair Tom Dietterich
11:20-11:40	Graeme R. Newell Species Distribution Models
11:40-12:00	Steven Phillips Computation for Conservation Biology
12:00-1:30	*Lunch*
	The Smart Grid Session Chair Brian Williams
1:30-2:00	George Arnold New Paradigms for the Electric Power System
	Challenges in Achieving Sustainabiliy Session Chair Mardavij Roozbehani
2:00-2:30	Janusz Bialek Mathematical and Computational Challenges in Modelling of Future Energy Systems
2:30-3:00	Marija Ilic Working on the Right Problem: Key to Bringing Value to the Sustainable Energy Future
	Synthesis for Renewable Energy Session Chair Brian Williams
3:00-3:30	Pam Silver Designing Sustainability

3:30-4:00	*Break*
	Information Gathering and Sensing Session Chair Paul Robertson
4:00-4:20	David Hill Real-Time Environmental Sensors for Sustainable Management: Challenges and Opportunities
4:20-4:40	John Fisher Information Gathering Under Resource Contraints: Greed is Good
	Transportation Session Chair Eric Feron
4:40-5:00	Hamsa Balakrishnan Reducing Fuel Burn and Emissions through Optimized Airport Operations
5:00-5:20	Eric Feron Optimal Control for a Sustainable Air Transportation Infrastructure
5:30-7:30	**Poster Session**

Tuesday, June 29

	Room 32-123
	Markets and Multi-agent Systems Panel Chair David Parkes
9:00-9:20	David Parkes Promoting Sustainability: Exploring the Role of Expressive, Indirect, and Hidden Markets
9:20-9:40	Keith Decker, Sachin Kamboj V2G: Electric Vehicle Coalitions for Vehicle-To-Grid Power Regulation
9:40-10:00	Sarvapali D. Ramchurn Multi-Agent Systems for the Smart Grid
10:00-10:20	Jeff Kephart A Multi-Agent Systems Perspective on Data Center Energy Management
10:20-10:30	Discussion
10:30-11:00	*Break*
11:00-12:00	**Competitions as a Tool for Focusing Innovation Panel** Session Chair Erika Wagner
Panelists	Francis Beland, XPrize Robynn Sturm, White House Office of Science & Technology Policy Norman Whitaker, Darpa
12:00-1:30	*Lunch*

	Track 1 Room 32-123	Track 2 Room 32-141	Track 3 Room 32-155
	Ecology and Species Distribution Modeling Session Chair Steven Phillips	**Electric Markets and Power System Modeling** Session Chair Mardavij Roozbehani	**Optimization; Multiple Objectives** Session Chair Martin Sachenbacher
1:30-1:50	Neo Martinez Eco-cubed: Ecology and Economy of Complex Ecosystems	Audun Botterud Wind Power Forecasting in Electricity Markets	Anika Schumann Preference Reasoning for Optimal Building Operation
1:50-2:10	Steve Kelling A Data Intensive Science Approach to Research in Biodiversity	Marija Ilic A Smart Grid Simulator: Illustration on a Small IEEE System	Kent Messer and Jacob Fooks The Application of Multiple Objective Linear Programming to Land Conservation
2:10-2:30	Rebecca Hutchinson Combining Boosted Regression Trees and Hierarchical Species Occupancy Models	Janusz Bialek Security of Supply and Wind	Hernan Aguirre Evolutionary Many-objective Optimization for Sustainability
2:30-2:50	Weng-Keen Wong Modeling Experts and Novices in Citizen Science Data	Matias Alejandro Negrete-Pincetic The Value of Volatile Resources in Electricity Markets	Bistra Dilkina and Jayant Kalagnanam Optimal Layout of Wind Farms
2:50-3:10	Daniel Fink Spatio-Temporal Exploratory Models of Bird Habitat and Migration	Mardavij Roozbehani Stability of Electricity markets under Real-time Pricing	Eshel Gidon Environmental Optimization of Human Diets: Application of Linear Programming to Food Choices and the US Farm Bill
3:10-3:20	Discussion	Discussion	Discussion

3:20-3:40	*Break*		
	Track 1 Room 32-123	Track 2 Room 32-141	Track 3 Room 32-155
	Natural Resource Management I Session Chair Shlomo Zilberstein	**Smart Grid and Optimization** Session Chair Andreas Hofmann	**Collaboration, Deliberation, and Communication** Session Chair Josh Introne
3:40-4:00	Shlomo Zilberstein Resource Management Using Approximate Dynamic Programming	David Waltz Computation's Role in Building the Smart Grid for a Sustainable Future	César A. Hidalgo Complexity and The Sustainability of Economic Development
4:00-4:20	Stefano Emmon Playing Games Against Nature: Optimal Policies for Renewable Resource Allocation	Masahiro Ono Market-Based Stochastic Optimization for Distributed Energy Management	Josh Introne Connecting Climate Models in the Climate Collaboratorium
4:20-4:40	Terry Freisz Modeling and Computing Sustainable Resource Exploitation in Dynamic Games with Application to Whaling	Warren Powell Stochastic Optimization and Optimal Learning in Energy Systems.	Mark Klein The MIT Deliberatorium: An Online Argumentation Tool for Enabling Large-Scale Deliberation About Complex Systemic Problems
4:40-5:00	Steven Barrett Air Quality Impacts of Aviation	Maria Fox Automated Prediction for Infrastructure Planning	Matthew Hockenberry Transparency in Sustainability: Communicating Impact on the Sourcemap Web Platform
5:00-5:10	Discussion	Discussion	Discussion
5:10-5:20	Passing Time	Passing Time	Passing Time
	Social Computing Session Chair Carla Gomes		
5:20-5:40	Eric Horvitz People, Quakes, and Communications: Inferences about a Seismic Event and its Influences on a Population from Call Data		
5:40-6:10	Tom Malone The Climate Collaboratorium: Harnessing Collective Intelligence to Address Global Climate Change		

Wednesday, June 30

	Room 32-123
	Energy Efficient Computation Panel Chair Arvind
9:00-9:20	Arvind Cell Phones: How Power Consumption Determines Functionality
9:20-9:40	Hank Hoffman and Martin Rinhard Reducing Energy Consumption with Code Perforation
9:40-10:00	Yuvraj Agarwal Green Computing: Hype or Hard Truth
10:00-10:20	Anantha Chandrakasan Ultra-Low-Power Circuits and Systems
10:20-10:30	Discussion
10:30-11:00	*Break*
	Adaptive Sampling and Autonomous Science Panel Chair Steve Chien
11:00-11:20	Pierre Lermusiaux The Science of Autonomy and Intelligent Ocean Sampling
11:20-11:40	Carlos Caicedo and Naomi Leonard Autonomy and Adaptive Sampling: Cooperative Control for Mobile Sensor Networks
11:40-12:00	Steve Chien Using Sensorwebs to Monitor Ecosystems: Integrating Sensing, Tracking, &
12:00-12:20	Kanna Rajan Finding the Proverbial Needle in the Coastal Ocean: The impact of Automated Reasoning in Marine Robotics
12:20:12:30	Discussion
12:00-1:30	*Lunch*

	Track 1 Room 32-123		Track 2 Room 32-141		Track 3 Room 32-155
	Natural Resource Management II & Development Session Chair Carla Gomes		**Power Systems Management** Session Chair Maria Fox		**Connected Sustainable Homes and Cities** Session Chair Sotirios Kotsopoulos
1:30-1:50	Nathan Eagle Big Data, Global Development, and Complex Social Systems	1:30-1:50	Helmut Simonis Constraint-Based Scheduling for Reducing Peak Electricity	1:30-1:50	Sotirios Kotsopoulos The Connected Sustainable Home
1:50-2:10	Auroop Ganguly Water Resources with Climate Change and Growing Population	1:50-2:10	Yousu Chen An Advanced Framework for Enabling Electricity Infrastructure Real-Time Decision Support	1:50-2:10	Juhong Park Simulation Studies for Connected Sustainable Architecture
2:10-2:30	Dan Sheldon Optimal Network Design for the Spread of Cascades	2:10-2:30	Ning Zhou A State Prediction Methodology for Electric Power Grid Operation	2:05-2:20	Andreas Hofmann Decision Support for Sustainable Homes
2:30-2:50	Steven Goldsmith Large Scale Lifecycle Analysis for Global Energy Systems	2:30-2:50	Martin Sachebacher The Shortest Path Problem Revisited: Optimal Routing for Electric Vehicles	2:20-2:35	Dimitris Papanikolaou Mobility on Demand
2:50-3:10	Gary Johnson Service Path Attribution Networks (SPANs):Spatially Quantifying the Flow of EcosystemServices from Landscapes to People	2:50-3:10	Una May O'Reilly A Computational Approach to Wind Energy Efficiency	2:35-2:50	David Quinn Urban Metabolism: Population Density and Transportation Patterns
3:10-3:20	Discussion	3:10-3:20	Discussion	2:50-3:05	Corey Ippolito Intelligent Adaptive Control Techniques for NASA's Sustainability Base
				3:05-3:20	Discussion

3:20-3:40	*Break*				
	Observations, Sensors, and Networks Session Chair Youssef Marzouk		**CyberSecurity and the Sustainability of Cyberspace** Session Chair Shannon Spires		**Ocean Observing Systems** Session Chair Brian Williams
3:40-4:00	Karsten Steinhaeuser Descriptive Analysis of the Global Climate System and Predictive Modeling for Uncertainty Reduction in Climate Projections using Complex Networks	3:40-4:00	Shannon Spires Smart Grid Cybersecurity Challenges	3:40-3:55	Don Eickstedt Automating Adaptive Sampling in the Ocean
4:00-4:20	Varun Mithal A Global Forest Cover Monitoring System	4:00-4:20	Roger Hurwitz Sustaining Cyberspace: Some Computational Aspects	3:55-4:10	Michael Benjamin and Henrik Schmidt Nested Autonomy for Large Scale Ocean Sensing
4:20-4:40	Edmund W. Schuster Internet Architecture for Bio Productivity	4:20-4:40	John Mallery The Cyber Insecurity Crisis as a Computational Sustainability Conundrum	4:10-4:25	Hui Li Goal-directed Commanding of Underwater Vehicles through Hybrid Planning
4:40-5:00	Constantinos Evangelinos On-Demand Distributed Computing for Real-Time Uncertainty Quantification	4:40-5:00	Discussion	4:25-4:40	Cesar Harada The Open Sailing Initiative
				4:40-5:00	Discussion