

AIR FORCE SCIENCE AND TECHNOLOGY 2030 *Master Schedule*

Thursday, May 10, 2018

0730 – 1700	Registration <i>East Lounge</i>
0815 – 0930	<p>Plenary Session; Welcome, Introductions, Overview of 2030 Initiative and Technical Themes <i>Whittenberger Auditorium</i></p> <p>Dr. Fred Cate, Indiana University, “Welcome and Introductions”</p> <p>Major General William Cooley, “Welcome and Air Force Mission; Overview of 2030 Initiative”</p> <p>Major Brook Bentley, “Introduction to Technical Themes”</p> <p>Major General William Cooley, “Question and Answer” Session</p> <p>Dr. Rick Van Kooten, “Schedule Review and Logistics”</p>
0930 – 0945	Refreshment Break <i>East Lounge</i>

0945 – 1130	Technical Session 1 Five concurrent technical presentation tracks and one ad-hoc track					
Artificial Intelligence for Mission Planning and Execution <i>Solarium, 1st Floor</i>	Novel Sensing and Data Fusion <i>Georgian, 1st Floor</i>	Cyber Assurance and Trusted Microelectronics <i>Univ. Club President's Room, 1st Floor</i>	Human Performance and Human Computer Interface <i>Oak, Main Level</i>	Next Generation Propulsion and Advanced Manufacturing <i>Frangipani, Main Level</i>	Ad Hoc Dialogue <i>Univ. Club Faculty Room, 1st Floor</i>	
<p>Nathan Jacobs, University of Kentucky “A Unified Model for Near/Remote Sensing”</p> <p>Memo Dalkilic, Indiana University “Warfare in 2030: Weaponization of Data and Quantum Computing”</p> <p>Taylor Johnson, Vanderbilt University “Formal Verification for Autonomous Cyber-Physical Systems with Hyperproperties & Hybrid Automata”</p> <p>Jim Gregory, Ohio State University “Opportunities and Challenges for Increasing Autonomy to Meet Air Force Needs”</p> <p>Shreyas Sen, Purdue University “Resource-Constrained Intelligence at the Connected Edge”</p> <p>Peter Schubert, IUPUI “Defeat Agile Intelligent Targets with Genetic Programming and Supercomputers”</p>	<p>Harley Johnson, University of Illinois “Data Driven Materials, Driving Data”</p> <p>Mike Renfro, University of Kentucky “Sensor Development for Component Analysis and Understanding Data from Distributed Sensors”</p> <p>Phil Ansell, University of Illinois “The Role of Aircraft Propulsion Electrification in for Air Superiority 2030”</p> <p>Emre Ertin, Ohio State University “Learning Generative Models for Distributed Multimodal Sensor Data Fusion with Limited Resource Sensing Platforms”</p> <p>Conrad Tucker, Pennsylvania State University “Social Media Networks as Dynamic Data Driven Application Systems (DDDAS) for Modeling and Predicting Threats”</p> <p>Erin Fitzgerald, University of Maryland “Sensor Research Spanning Spectrum and Scale and in Emerging Domains”</p> <p>Ian Foster, University of Chicago “Inverting the Pyramid: From Data Fusion to Model-Directed Attention”</p>	<p>L. Jean Camp, Indiana University “Identifying the Anomaly that is the Insider Threat”</p> <p>Jaideep Vaidya, Rutgers University “Analytics Driven Security Configuration and Management”</p> <p>Raquel Hill, Indiana University “Hijacking Network Traffic: Temporal Analysis of Adverse Changes in the Internet Topology”</p> <p>Dongyan Xu, Purdue University “Cross-Layer Retrofitting of Robotic Vehicle Controllers for Security and Resiliency”</p> <p>Eunice Santos, Illinois Institute of Technology “The Human Element in Cyber Assurance: Modeling Insider Threat Behaviors in Cyber Intelligence & Operation”</p>	<p>Katie Siek, Indiana University “Airmen Designing with and for Themselves”</p> <p>Nadine Sarter, University of Michigan “Human Systems Integration: Engineering and Design at the Intersection of Humans and Complex Technologies”</p> <p>Robert Chapman, Indiana University “Physiological Factors Affecting US Military Personnel Performance in Extreme Environments”</p> <p>Melissa Kacena, IU School of Medicine “Spaceflight Results in Impaired Muscle and Skeletal Function, including Bone Healing”</p> <p>Andrew Coggan, UPU “Dietary Nitrate: Aviator's Friend or Foe?”</p>	<p>Sergey Leonov, University of Notre Dame “Electrically Driven Scramjet”</p> <p>Mike Benzakein, Ohio State University “Next Generation Propulsion”</p> <p>Seong-kyun Im, University of Notre Dame “Unstart Phenomena Induced by Flow Choking in Scramjet Inlet-Isolators”</p> <p>Keerti Kappagantula, Ohio University “Need for Understanding Dynamic Material Evolution Under High Heating Rates”</p> <p>Jeff Rhoads, Purdue University “Research at a Technical Intersection: Energetic Materials and Additive Manufacturing”</p> <p>James Klausner, Michigan State University “Advanced Manufacturing Ideas for Next Generation Air Force”</p> <p>Wing Kam Liu, Northwestern University “Data-driven Multiscale Modeling and Design of Advanced Material Systems”</p>		
1145 –1245	Luncheon, Welcome and Remarks <i>Alumni Hall</i>					
	Dr. Michael A. McRobbie , President of Indiana University					
1315 – 1500	Technical Session 2 Five concurrent ideation sessions and one ad-hoc track					
Artificial Intelligence for Mission Planning and Execution <i>Solarium, 1st Floor</i>	Novel Sensing and Data Fusion <i>Georgian, 1st Floor</i>	Cyber Assurance and Trusted Microelectronics <i>Univ. Club President's Room, 1st Floor</i>	Human Performance and Human Computer Interface <i>Oak, Main Level</i>	Next Generation Propulsion and Advanced Manufacturing <i>Frangipani, Main Level</i>	Ad Hoc Dialogue <i>Univ. Club Faculty Room, 1st Floor</i>	
Ideation session building on topics raised in Session 1	Ideation session building on topics raised in Session 1	Ideation session building on topics raised in Session 1	Ideation session building on topics raised in Session 1	Ideation session building on topics raised in Session 1	Ideation session building on prior topics	

1515 – 1530	Refreshments <i>East Lounge</i>					
1530 - 1715	Technical Session 3 Five concurrent technical presentation tracks and one ad-hoc track					
	Artificial Intelligence for Mission Planning and Execution <i>Solarium, 1st Floor</i>	Novel Sensing and Data Fusion <i>Georgian, 1st Floor</i>	Cyber Assurance and Trusted Microelectronics <i>Univ. Club President's Room, 1st Floor</i>	Human Performance and Human Computer Interface <i>Oak, Main Level</i>	Next Generation Propulsion and Advanced Manufacturing <i>Frangipani, Main Level</i>	Ad Hoc Dialogue <i>Univ. Club Faculty Room, 1st Floor</i>
	<p>Shane Shaneman, Carnegie Mellon “The AI Stack: A Blueprint for Developing and Deploying Artificial Intelligence”</p> <p>Henry Hoffmann, University of Chicago “Controlling AI Engines in Dynamic Environments”</p> <p>Avinash Kodi, Ohio University “Designing Energy-Efficient Accelerators with Machine Learning for Advanced On-Board Computing”</p> <p>Waheed Bajwa, Rutgers University “Machine Learning in 2030: Distributed, Adversarial, and Quantifiable”</p> <p>Venkat Raman, University of Michigan “Computational Sciences for Digitalization of Complex Systems”</p> <p>Lauren Christopher, IUPUI “3D Acquisition and Tracking in Virtual Environments using Machine Learning with Human-in-the-loop Decision-Making”</p>	<p>Soumyajit Mandal, Case Western Reserve University “Advanced Integrated Microsystems and Networks for Persistent Sensing and Data-Driven Awareness and Control”</p> <p>Ayusman Sen, Pennsylvania State University “Enzyme Pumps: Self-Powered Sensing Devices for Detecting and Reacting with Specific Analytes”</p> <p>Mike Stroschio, University of Illinois - Chicago “Novel Sensing and Data Fusion: Phonon Engineering”</p> <p>Rashmi Jha, University of Cincinnati “Brain-Inspired Artificial Intelligence in Sensors for Real-time Actionable Insights”</p> <p>Sinan Kenten, Northwestern University “Molecularly Informed Design of Structural Nanocomposites Inspired from Nature”</p>	<p>Scott Russell, Indiana University “Cybersecurity Decision Making from First Principles”</p> <p>Bimal Viswanath, University of Chicago “Security in an AI-driven World”</p> <p>Boyang Wang, University of Cincinnati “Secure Search over Encrypted Data”</p> <p>Dan Gauthier, Ohio State University “Securing Communication Channels via Quantum Key Distribution”</p>	<p>Shovan Maly, Purdue University “Human Body Communication for Human Machine Interaction and Smart Healthcare”</p> <p>Jonathan Wenk, University of Kentucky “Applications in Human Performance and Human Computer Interface”</p> <p>Emily Graczyk, Case Western Reserve University “Symbiotic Human-Technology Interfaces to Expand Human Performance and Capacity”</p> <p>John Georgiadis, Illinois Institute of Technology “to be announced”</p> <p>Savas Kaya, Ohio University “Printed Capacitive Sensor Arrays for Efficient and Flexible Human Performance Monitoring”</p> <p>Mitra Dutta, University of Illinois - Chicago “Human Performance and the Human Computer Interface: Special Emphasis on the Eye”</p>	<p>Thomas Juliano, University of Notre Dame “Hypersonic Inlet Evaluation in Quiet Wind Tunnels”</p> <p>Terry Meyer, Purdue University “High-Fidelity Experimental and Computational Methods for Advancing Next Generation Propulsion Systems”</p> <p>Mark Turner, University of Cincinnati “The Role and Future of Propulsion & Turbomachinery Design”</p> <p>Mirko Gamba, University of Michigan “Accelerating Advanced High-Speed Vehicle and Propulsion Design Research”</p> <p>Alexandre Martin, University of Kentucky “Modeling Energetic Materials for Hypersonic Flight”</p> <p>Patton Allison, Michigan State University “Fast Fuels”</p> <p>Thomas Corke, University of Notre Dame “Hypersonic Propulsion -- 2030 Prediction”</p>	
1730 - 1900	Poster Session and Networking Reception <i>Alumni Hall</i>					

Friday, May 11, 2018

0800 – 0945	Technical Session 4 Select Number of Presentations AI (2), Sensing (1), then Concurrent Ideation Sessions and One Ad-Hoc Track					
Artificial Intelligence for Mission Planning and Execution <i>Solarium, 1st Floor</i>	Novel Sensing and Data Fusion <i>Georgian, 1st Floor</i>	Cyber Assurance and Trusted Microelectronics <i>Univ. Club President's Room, 1st Floor</i>	Human Performance and Human Computer Interface <i>Oak, Main Level</i>	Next Generation Propulsion and Advanced Manufacturing <i>Frangipani, Main Level</i>	Ad Hoc Dialogue <i>Univ. Club Faculty Room, 1st Floor</i>	
2 Presentations, then Ideation session building on topics raised in Sessions 3 & 4	1 Presentation, then Ideation session building on topics raised in Sessions 3 & 4	Ideation session building on topics raised in Session 3	Ideation session building on topics raised in Session 3	Ideation session building on topics raised in Session 3	Ideation session building on topics raised in Session 3	
Manish Kumar , University of Cincinnati "Mission Planning and Task Allocation in Large-Scale Systems Based on Artificial Intelligence" David Crandall , Indiana University "Studying Humans to Improve Artificial Intelligence "	John Simon , University of Chicago "Rydberg Cavity QED for Transmission, Processing, and Storage of Quantum-Secured Information"					
1000 – 1015	Refreshments <i>East Lounge</i>					
1015 – 1200	Reporting Outcomes - Reports from Moderators from each track <i>Alumni Hall</i> Facilitators will give brief reports from each concurrent track with time for questions regarding their specific track Overall Question & Answer Session					
1200 – 1205	Wrap Up and Thank You <i>Alumni Hall</i> Major General William Cooley Dr. Rick Van Kooten					
1205	Box Lunches and Departure <i>Solarium</i>					