FY2019 MULTIDISCIPLINARY UNIVERSITY RESEARCH INITIATIVE (MURI) – SELECTED PROJECTS

Topic Number	Topic Name	Project Name	Sponsoring Office	Primary University Subaward Universities[1]	University Location (state)	Principal investigator
1	Fundamental Limits of Information Latency	Science of Tracking, Control and Optimization of Information Latency for Dynamic Military IoT Systems	ONR	**Virginia Polytechnic Institute and State University** Massachusetts Institute of Technology Ohio State University Virginia Tech	VA MA OH VA	Dr. Jeffery Reed
2	Programmable Graphene Molecular Architecture	DNA-enabled Hierarchical Assembly of Graphene Electronics	ONR	**University of Nebraska-Lincoln** University of Illinois at Urbana-Champaign New York University University of California, Berkeley University of Chicago	NE IL NY CA IL	Dr. Alex Sinitskii
3	Identifying invariances for improved modeling and prediction of oceanographic phenomena	Machine Learning for Submesoscale Characterization, Ocean Prediction, and Exploration (ML-SCOPE)	ONR	**Massachusetts Institute of Technology** University of California, Los Angeles Duke University Florida State University University of Miami, RSMAS	MA CA NC FL FL	Dr. Pierre Lermusiaux
4	Self-Assembly for High Performance Organic Electronics	Center for Self-Assembled Organic Electronics	ONR	**Pennsylvania State University** Stanford University University of Chicago Iowa State University Imperial College, London[2]	PA CA IL IA UK	Dr. Enrique Gomez

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5	Bio-Inspired high-dimension control through models of cephalopod distributed information processing	A CyberOctopus that learns, evolves and adapts	ONR	**University of Illinois at Urbana-Champaign** Stanford University Northwestern University	IL CA IL	Dr. Girish Chowdhary
6	Active Perception and Knowledge Exploitation in Navigation and Spatial Awareness	Neuro-Autonomy: Neuroscience-Inspired Perception, Navigation, and Spatial Awareness,	ONR	**Boston University** Massachusetts Institute of Technology University of Melbourne[2] Macquarie University[2] Queensland University of Technology[2] University of New South Wales[2]	MA MA AUS AUS AUS AUS	Dr. Ioannis Paschalidis
7	Advanced Analytical and Computational Modeling of Arctic Sea Ice	Mathematics and Data Science for Improved Modeling and Prediction of Arctic Sea Ice	ONR	**New York University** University of Wisconsin California Institute of Technology University of Washington	NY WI CA WA	Dr. Dimitris Giannakis
8	Topology & Advanced Dynamics of Coupled Human/Machine Systems	System for Efficient, Accurate, and Precise Clinical Vestibular Threshold Testing	ONR	**The Ohio State University**	OH	Dr. Daniel Merfeld
9	Clearing your Head: The Glymphatic System and Restorative Effects of Sleep?	How sleep clears your brain: Slow waves, glymphatic waste removal, and synaptic down-selection	ARO	**University of Rochester** University of Wisconsin - Madison	NY WI	Dr. Maiken Nedergaard

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10	Foundations of Emergent Computation and Self-Organized Adaptation	Formal Foundations of Algorithmic Matter and Emergent Computation	ARO	**Georgia Institute of Technology** Massachusetts Institute of Technology Northwestern University Arizona State University	GA MA IL AZ	Dr. Dana Randall
11	Multi-layer Network Modeling of Plant and Pollen Distribution across Space	Networked palynology models of pollen and human systems	ARO	**Arizona State University** University of Texas at Austin Emory University	AZ TX GA	Dr. Anthony Grubesic
12	Near field radiative heat energy transfer between nano-structured materials	Near-Field Radiative Heat Transfer and Energy Conversion in Nanogaps of Nano- and Meta-Structured Materials	ARO	**University of Michigan, Ann Arbor** Massachusetts Institute of Technology Purdue University Stanford University Yale University	MI MA IN CA CT	Dr. Sangi Reddy
13	Networked Interactions Governing Community Dynamics	Investigating energy efficiency, information processing and control architectures of microbial community interaction networks	ARO	**University of Southern California** University of Wisconsin - Madison University of Michigan, Ann Arbor California Institute of Technology	CA WI MI CA	Dr. James Boedicker

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14	Prediction and Control in Particulate Systems	Predicting and Controlling the Response of Particulate Systems through Grain-Scale Engineering	ARO	**California Institute of Technology** University of Chicago Northwestern University Carnegie Mellon University Louisiana State University and A&M College	CA IL IL PA LO	Dr. Jose Andrade
15	Reactive and non-Reactive Scattering from Targeted Molecular Quantum States	Quantum State Control of Molecular Collision Dynamics	ARO	**University of Missouri** Stanford University University of Colorado, Boulder Harvard University University of New Mexico University of Nevada, Las Vegas	MO CA CO MA NM NV	Dr. Arthur Suits
16	Unified Decision Theory: From Bounded to Unbounded Rationality	Foundations of Decision Making with Behavioral and Computational Constraints	ARO	**Massachusetts Institute of Technology** Cornell University	MA NY	Dr. Ali Jadbabaie-Moghadam
17	THz Electronics Based on Antiferromagnets	Terahertz Spintronics with Antiferromagnetic Insulators	AFOSR	**University of Central Florida** New York University Oakland University The Ohio State University University of California, Riverside University of California, Santa Cruz	FL NY MI OH CA CA	Dr. Enrique del Barco

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18	Quantum Information Concepts from Tensor Networks and the Holographic Principle	Quantum Codes, Tensor Networks, and Quantum Spacetime	AFOSR	**University of California, Santa Barbara** California Institute of Technology Massachusetts Institute of Technology Stanford University University of Illinois at Urbana-Champaign University of Maryland	CA CA MA CA IL MD	Dr. Xi Dong
19	2D Magnetic Heterostructures for Flexible, Lightweight Electronics2D	MAGIC: New Science from Two- Dimensional MAGnetIC Heterostructures	AFOSR	**University of Washington** Massachusetts Institute of Technology Cornell University Carnegie-Mellon University The Ohio State University	WA MA NY PA OH	Dr. Xiaodong Xu
20	Feedback Control with Sparse Neural Signals	Neural-inspired sparse sensing and control for agile flight	AFOSR	**University of Washington** Carnegie Mellon University Massachusetts Institute of Technology	WA PA MA	Dr. Bingni Brunton
21	Dissipation Engineering in Open Quantum Systems	Dissipatively Stabilized Qubits and Materials	AFOSR	**University of Chicago** University of Maryland Yale University	IL MD CT	Dr. Jonathan Simon
22	Group-IV Alloy Synthesis and Materials Properties	Understanding and Breaking the Material Barriers of SiGeSn Alloys for Infrared Devices	AFOSR	**University of Arkansas at Fayetteville** Arizona State University Dartmouth University University of Massachusetts - Boston George Washington University	AR AZ NH MA DC	Dr. Shui-Qing (Fisher) Yu

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23	Neuromorphic Networks for Multifunctional Intelligent Systems	Brain-Inspired Networks for Multifunctional Intelligent Systems in Aerial Vehicles	AFOSR	**University of California, Los Angeles** Stanford University University of Massachusetts, Amherst University of Michigan, Ann Arbor University of Tennessee, Knoxville	CA CA MA MI TN	Dr. Yong Chen
24	Microstructurally-Aware Continuum Models for Energetic Materials	Integrating Multiscale Modeling and Experiments to Develop a Meso-Informed Predictive Capability for Explosives Safety and Performance	AFOSR	**University of Missouri** University of Iowa University of Illinois at Urbana-Champaign Columbia University Rensselaer Polytechnic Institute Purdue University University of Illinois at Chicago	MO IA IL NY NY IN IL	Dr. Thomas Sewell

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