

FY2024 MULTIDISCIPLINARY UNIVERSITY RESEARCH INITIATIVE (MURI) - SELECTED PROJECTS

Topic Number	Topic Name	Project Title	Sponsoring Office	Primary University Subaward Universities (1)	University Location (State)	Principal Investigator
1	Interventions in Large and Complex Networks: Prediction, Monitoring and Evaluation	Evaluating, Predicting, Optimizing, and Monitoring Hypothetical Interventions in Large Networked Systems	ONR	Massachusetts Institute of Technology Harvard University Princeton University Leland Stanford Junior University	MA MA NJ CA	Caroline Uhler
2	The Deep Sea Benthic Boundary Layer; Interactions and Coupling with the Deep Seabed	Towards an Integrative Understanding of Near-Surface Seabed Structure and Stability in the Deep Sea	ONR	Dauphin Island Sea Lab – Marine Environmental Sciences Consortium University of Florida, Gainesville University of Texas at Austin University of New Hampshire University of Virginia Oregon State University	AL FL TX NH VA OR	Kelly Dorgan
2	The Deep Sea Benthic Boundary Layer; Interactions and Coupling with the Deep Seabed	Abyssal Boundary Layers: High-Resolution, Interdisciplinary Observations and Theory	ONR	University of California, San Diego, Scripps Institution of Oceanography	CA	Matthew Alford
3	Machine Learning Methods for Phase Change Heat Transfer Modeling and Design	Machine Learning Enabled Two-phase Flow Metrologies, Models, and Optimized DesignS (METHODS)	ONR	Purdue University Georgia Institute of Technology Case Western Reserve University Brown University Michigan State University	IN GA OH RI MI	Justin Weibel
3	Machine Learning Methods for Phase Change Heat Transfer Modeling and Design	Fundamentals of Machine Learning for Phase Change Heat Transfer	ONR	University of California, Irvine Leland Stanford Junior University University of Illinois Urbana Champaign Massachusetts Institute of Technology	CA CA IL MA	Yoonjin Won
4	Complexity Science Disorder-Promoted Synchronization	Disorder-Influenced Collective Dynamics of Nonlinear Oscillator Systems	ONR	University of Maryland, College Park San Diego State University University of California, Irvine University of California, Los Angeles	MD CA CA CA	Balakumar Balachandran
4	Complexity Science Disorder-Promoted Synchronization	AI-Guided Self-Organization: Tailoring Disorder to Shape Complex Nonlinear Dynamics	ONR	Yale University University of Michigan University of Maryland, College Park Arizona State University Virginia Tech Wesleyan University	CT MI MD AZ VA CT	Hui Cao

FY2024 MULTIDISCIPLINARY UNIVERSITY RESEARCH INITIATIVE (MURI) - SELECTED PROJECTS

Topic Number	Topic Name	Project Title	Sponsoring Office	Primary University Subaward Universities (1)	University Location (State)	Principal Investigator
5	Theory and Algorithms for Learning and Decision-Making in Multi-Agent Systems	Algorithms, Learning, and Game Theory: The Foundations of Multi-Agent Systems	ONR	Columbia University Massachusetts Institute of Technology University of Maryland, College Park Carnegie Mellon University University of California, San Diego	NY MA MD PA CA	Christos Papadimitriou
5	Theory and Algorithms for Learning and Decision-Making in Multi-Agent Systems	New Game Theory for New Agents: Foundations and Learning Algorithms for Decision-Making Mixed-Agents	ONR	University of Michigan Yale University Toyota Technological Institute of Chicago University of Southern California Massachusetts Institute of Technology Harvard University California Institute of Technology Cornell University	MI CT IL CA MA MA CA NY	Vijay Subramanian
6	Reexamining Ocean Effects on Atmospheric Wind Drag and Enthalpy Flux	SASCWATCH: Study on Air-Sea Coupling with WAVes, Turbulence, and Clouds at High winds	ONR	University of Notre Dame Woods Hole Oceanographic Institution University of Washington Colorado State University Colorado School of Mines Texas A&M University	IN MA WA CO CO TX	David Richter
7	Understanding Thermal and Mechanical Behavior in High Temperature Materials	DETER: Disrupting Electron Transport to Minimize Thermal Conductivity	ONR	Missouri University of Science and Technology Duke University University of California, Irvine Pennsylvania State University	MO NC CA PA	William Fahrenholtz
8	Understanding and Tailoring the Interactions between Metamaterials and Hypersonic Flows	Phononic Subsurfaces and Porous Metasurfaces for the Control of Hypersonic Boundary-Layer Flows	ONR	University of Colorado, Boulder University of Maryland Johns Hopkins University Purdue University University of Kentucky Case Western Reserve University	CO MD MD IN KY OH	Mahmoud Hussein
9	Cognitive and Neuroscience-Inspired Problem-Solving for Autonomous Systems in Physical Environments	REPRISM: Flexible Embodied Problem-Solving by Manipulating the Representational Prism	ONR	Brown University Massachusetts Institute for Technology	RI MA	George Konidakis

FY2024 MULTIDISCIPLINARY UNIVERSITY RESEARCH INITIATIVE (MURI) - SELECTED PROJECTS

Topic Number	Topic Name	Project Title	Sponsoring Office	Primary University Subaward Universities (1)	University Location (State)	Principal Investigator
9	Cognitive and Neuroscience-Inspired Problem-Solving for Autonomous Systems in Physical Environments	Overcoming Unexpected Failures using Neurocognitive Multi-abstraction Active Exploration	ONR	Carnegie Mellon University University of Massachusetts, Amherst Massachusetts Institute of Technology Princeton University Leland Stanford Junior University University of Washington	PA MA MA NJ CA WA	David Held
10	Plasmon-Controlled Single-Atom Catalysis	Combining Nonequilibrium Chemistries with Atomic Precision	AFOSR	Rice University University of California, Santa Barbara Princeton University Emory University Tufts University	TX CA NJ GA MA	Naomi Halas
11	A New Mathematical Paradigm for Integrating Data, Models, Decisions	Mathematics of Digital Twins	AFOSR	Leland Stanford Junior University Ohio State University University of California, San Diego California Institute of Technology	CA OH CA CA	Daniel Tartakovsky
12	AIN Semiconductors for High-Power Electronics	Enabling Extreme Bandgap Electronics – EXBE	AFOSR	North Carolina State University Georgia Institute of Technology University of South Carolina Ohio State University University of New Mexico	NC GA SC OH NM	Zlatko Sitar
13	Compositionally Complex Ceramics (CCCs) via Knowledge-Guided Pyrolysis for Hypersonics	Compositionally Complex Ceramics for Hypersonics via Knowledge-Guided Ceramization	AFOSR	University of Alabama at Birmingham Rice University Arizona State University Northwestern University University of California, Davis Pennsylvania State University	AL TX AZ IL CA PA	Kathy Lu
14	Piezoelectric Materials Interfaced with Semiconductors for Integrated Quantum Systems	Piezoelectric Control of Quantum States in Solid-State Defects (PIQS)	AFOSR	University of Maryland, College Park University of Chicago Massachusetts Institute of Technology Pennsylvania State University Rice University	MD IL MA PA TX	Edo Waks
15	Space-Based Characterization of Arctic Permafrost Dynamics	I'M-SHARP: Interdisciplinary Material Science for the Hyperspectral Remote Sensing of Permafrost	AFOSR	University of Illinois Urbana-Champaign University of Alaska Fairbanks Saint Louis University Pennsylvania State University Ohio State University	IL AK MO PA OH	Tugce Baser

FY2024 MULTIDISCIPLINARY UNIVERSITY RESEARCH INITIATIVE (MURI) - SELECTED PROJECTS

Topic Number	Topic Name	Project Title	Sponsoring Office	Primary University Subaward Universities (1)	University Location (State)	Principal Investigator
16	Modeling and Measuring Multilevel Resonance	BRAIN (Belief Resonance and AI Narratives): Understanding Belief-Narrative Resonance in the Era of Generative AI	AFOSR	Indiana University New York University University of California, Berkeley	IN NY CA	Yong-Yeol Ahn
17	Fundamental Limits of Passive Heterodyne Photodetection of Incoherent, Broadband Sources	Precision Radiometry for Incoherent Spectral Measurements (PRISM)	AFOSR	University of Texas at Austin University of Central Florida University of Colorado Boulder University of Michigan University of Southern California Yale University	TX FL CO MI CA CT	David Burghoff
18	Tensor Networks and Low-Rank Methods for High-Dimensional Computing	Tensor Approaches for Simulating Kinetic Systems	AFOSR	University of Delaware Michigan State University University of Washington University of Illinois Urbana-Champaign Leland Stanford Junior University University of California, Santa Cruz	DE MI WA IL CA CA	Jingmei Qiu
19	Bioinspired Vibronic Coherence in Molecular and Solid-State systems	QuVET: A MURI Center for Quantum Vibronics in Energy and Time	ARO	University of California, Riverside California Institute of Technology Massachusetts Institute of Technology Columbia University	CA CA MA NY	Nathaniel Gabor
20	Engineered Quantum Materials Approaches to Room-Temperature Single Photon Detection in Infrared Range	Quantum ENZ Materials for Midwave IR Single-Photon Detection (QEMISD)	ARO	Harvard University Michigan Technological University Pennsylvania State University Vanderbilt University	MA MI PA TN	Eric Mazur
21	The Ecological Succession of Environmental Films at the Gas-Solid Interface	ABCs of SUCCESS: Associating Biology and Chemistry to study SUCcESSION in Environmental SurfaceS	ARO	University of Iowa University of Hawaii at Manoa Purdue University Iowa State University Texas Tech University	IA HI IN IA TX	Scott Shaw
22	Predicting Performance Outcomes for Heterogeneous Materials Under Complex Loading	Complexity, Nonlocality, and Uncertainty in Heterogeneous Solids	ARO	Carnegie Mellon University University of Colorado Boulder University of Chicago Louisiana State University and A & M College University of Pennsylvania	PA CO IL LA PA	Kaushik Dayal

FY2024 MULTIDISCIPLINARY UNIVERSITY RESEARCH INITIATIVE (MURI) - SELECTED PROJECTS						
Topic Number	Topic Name	Project Title	Sponsoring Office	Primary University Subaward Universities (1)	University Location (State)	Principal Investigator
23	Synchronization in Natural and Engineered Systems	NEURAL-SYNC: From Synchronized Oscillations to Neural Computing, Communication, and Adaptation	ARO	University of California, Santa Barbara University of Pennsylvania University of California, San Diego Massachusetts Institute of Technology University of California, Riverside University of Virginia	CA PA CA MA CA VA	Francesco Bullo
24	Ferroelectric Group III and II-IV-Nitride Semiconductors for Photonics and Electronics	Nanoscale and Transduction-Optimized Pristine Ferroelectric Nitrides (NanoTOP)	ARO	University of Michigan Georgia Institute of Technology Ohio State University Pennsylvania State University Yale University	MI GA OH PA MA	Zetian Mi
25	SCAMP 3D - Synthetic Colloidal Assemblies for Meta-Photonic in Three Dimensions	Multiscale Self-Assembly of Non-Hermitian Devices: Meta-Atoms to Nanomaterials (SANDMAN)	ARO	New York University Leland Stanford Junior University Pennsylvania State University University of Illinois Urbana-Champaign University of Pennsylvania University of Chicago	NY CA PA IL PA IL	David Pine

(1) Subaward institutions are subject to change at the discretion of the primary institution.