



Agency	MURI Title	Lead Institution Team Member Institutions ¹	Principal Investigator	State
MURI Topic 1: Cellular, Molecular, Genetic and Biochemical Correlates of Training				
ONR	How Unsupervised Learning Impacts Training: From Brain to Behavior	University of California, San Diego University of California, Irvine	Howard Poizner	CA CA
ONR	From Attentive to Automatic Performance: A Multi-Scale, Multi-Species, and Multi-Modal Investigation of Spatial Learning	George Mason University	Giorgio Ascoli	VA
MURI Topic 2: Removing the Botnet Threat				
ONR	Infiltration of Botnet Command & Control and Support Ecosystems	University of California, San Diego University of California, Berkeley International Computer Science Institute ²	Stefan Savage	CA CA
ONR	Botnet Attribution and Removal: from Axioms to Theories to Practice	Georgia Institute of Technology University of Michigan Stanford University University of California, Santa Barbara	Wenke Lee	GA MI CA CA
MURI Topic 3: Machine Intelligence and Adaptive Classification for Autonomous Systems				
	No Award Made			
MURI Topic 4: Highly Decentralized Autonomous Systems for Force Protection and Damage Control				
ONR	ANTIDOTE: Adaptive Networks for Threat and Intrusion Detection or Termination	University of Southern California Carnegie Mellon University University of Pennsylvania Massachusetts Institute of Technology	Gaurav Sukhatme	CA PA PA MA
MURI Topic 5: Bio-inspired Autonomous Agile Sensing and Exploitation of Regions of Interest within Wide Complex Scenes				
ONR	Figure-Ground Processing, Saliency and Guided Attention for Analysis of Large Natural Scenes	Johns Hopkins University Yale University California Institute of Technology University of Maryland, College Park Harvard University	Ernst Niebur	MD CT CA MD MA

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2. An independent, non-profit research institute is identified in the lead institution's proposal. No MURI funding will be provided to the independent, non-profit research institute.

FY 2009 MULTIDISCIPLINARY UNIVERSITY RESEARCH INITIATIVE (MURI) – SELECTED PROJECTS

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MURI Topic 6: Computational Intelligence for Decentralized Teams of Autonomous Agents				
ONR	Decentralized Reasoning in Reduced Information Spaces	Carnegie Mellon University Massachusetts Institute of Technology University of Pennsylvania University of Illinois, Urbana-Champaign University of Washington	Andrew Bagnell	PA MA PA IL WA
ONR	Smart Adaptive Reliable Teams for Persistent Surveillance (SMARTS)	Massachusetts Institute of Technology Boston University University of California, Berkeley University of Pennsylvania	Daniella Rus	MA MA CA PA
MURI Topic 7: Dynamic Biological Adaptations to the Undersea Light Field				
ONR	Dynamic Camouflage in Benthic and Pelagic Cephalopods: An Interdisciplinary Approach to Crypsis Based on Color, Reflection, and Bioluminescence	Duke University University of California, Santa Barbara University of California, San Diego	Sonke Johnsen	NC CA CA
ONR	Development of Biological Response to the Dynamic Spectral-Polarized Underwater Light Field	University of Texas, Austin University of Connecticut University of Rhode Island City College, City University of New York Texas A&M University Stanford University	M Cummings	TX CT RI NY TX CA
MURI Topic 8: Grounding Language Understanding in Cognitive Architecture				
ONR	Unified Theories of Language and Cognition	Rensselaer Polytechnic Institute Arizona State University University of Maryland, Baltimore County Stanford University University of Southern California	Nicholas Cassimatis	NY AZ MD CA CA

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MURI Topic 9: Tailoring Electronic Bandgap of Nanostructured Graphene				
ONR	Functionalized Nanoscale Graphene: A Platform for Integrated Nanodevices	University of California, Berkeley Rice University University of California, Los Angeles	Michael Crommie	CA TX CA
ONR	Tailoring Electronic Properties of Graphene at the Nanoscale	University of Maryland, College Park Columbia University Purdue University Stanford University University of Florida	Michael Fuhrer	MD NY IN CA FL
ONR	Graphene Approaches to Terahertz Electronics (GATE)	Massachusetts Institute of Technology Harvard University Boston University	Michael Strano	MA MA MA
MURI Topic 10: Neurological System-Inspired Multifunctional Materials Design for Autonomous State Awareness Against Exogenous Threats				
AFOSR	Bio-Inspired Intelligent Sensing Materials for Fly-by-Feel Autonomous Vehicle	Stanford University University of California, Los Angeles University of Denver University of Washington University of British Columbia ³	Fu-Kuo Chang	CA CA CO WA
MURI Topic 11: Chemical Energy Enhancement by Nonequilibrium Plasma Species				
AFOSR	Fundamental Mechanisms, Predictive Modeling, and Novel Aerospace Applications of Plasma Assisted Combustion	Ohio State University Princeton University Drexel University Georgia Institute of Technology Pennsylvania State University	Walter Lempert	OH NJ PA GA PA

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MURI Topic 12: Ultracold Molecules				
AFOSR	Production, Manipulation, and Applications of Ultracold Molecules	University of Connecticut Harvard University Massachusetts Institute of Technology Yale University Temple University University of Colorado	Susanne Yelin	CT MA MA CT PA CO
AFOSR	Ultracold Polar Molecules: New Phases of Matter for Quantum Information and Quantum Control	University of Maryland, College Park Kansas State University University of Chicago University of Colorado Georgetown University	Paul Julienne	MD KS IL CO DC
MURI Topic 13: Search for New Superconductors for Energy and Power Applications				
AFOSR	Towards New and Better High Temperature Superconductors	Stanford University Princeton University Rutgers University Rice University Florida State University	M.R. Beasley	CA NJ NJ TX FL
AFOSR	Search for New Superconductors for Energy and Power Applications	University of California, San Diego University of California, Irvine University of Wisconsin, Milwaukee	Ivan Schuller	CA CA WI
AFOSR	Broad-Based Search for New and Practical Superconductors	University of Maryland, College Park University of California, San Diego Iowa State University	Richard Greene	MD CA IA
MURI Topic 14: Complex Nonperiodic Nanophotonics				
AFOSR	Robust and Complex On-Chip Nanophotonics	Stanford University Massachusetts Institute of Technology Cornell University	Shanhui Fan	CA MA NY

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MURI Topic 15: Multi-Scale Fusion of Information for Uncertainty Quantification and Management in Large-Scale Simulations				
AFOSR	Multi-Scale Fusion of Information for Uncertainty Quantification in Large-Scale Simulations	Brown University Massachusetts Institute of Technology Cornell University California Institute of Technology	George Karniadakis	RI MA NY CA
MURI Topic 16: Learning Decision Architectures for Intelligent Cooperative Control of Autonomous Systems				
AFOSR	Distributed Learning and Information Dynamics in Networked Autonomous Systems	Georgia Institute of Technology University of Maryland, College Park Massachusetts Institute of Technology Johns Hopkins University	Jeff Shamma	GA MD MA MD
MURI Topic 17: Information Dynamics in Networks				
AFOSR	Information Dynamics as a Foundation for Network Management	Princeton University California Institute of Technology Stanford University University of California, Irvine University of Pennsylvania Arizona State University University of Wisconsin, Madison	Robert Calderbank	NJ CA CA CA PA AZ WI
MURI Topic 18: Synthesis, Analysis, and Prognosis of Hybrid-Material Flight Structures				
AFOSR	Synthesis, Characterization and Modeling of Functionally Graded Multifunctional Hybrid Composites for Extreme Environments	Texas A&M University University of Illinois, Urbana-Champaign Virginia Polytechnic Institute Stanford University University of Dayton	Dimitris Lagoudas	TX IL VA CA OH
MURI Topic 19: Biophotonics: Optical Effects Through Nature's Photonic Control				
AFOSR	Bio-Inspired Optics: Offering Physical and Technological Insights in Color and Structure (BIOOPTICS)	Harvard University University of California, San Diego University of Wisconsin, Madison University of Arizona Georgia Institute of Technology	Joanna Aizenberg	MA CA WI AZ GA

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MURI Topic 20: Fundamental Graphene Material Studies and Device Concepts				
AFOSR	New Materials Approaches for Future Graphene-Based Devices	Columbia University Cornell University	Richard Osgood	NY NY
MURI Topic 21: Application Software and Data Protection for Untrusted Platforms				
AFOSR	Hardware, Languages, and Architectures for Defense Against Hostile Operating Systems	University of California, Berkeley University of Illinois, Urbana-Champaign Harvard University University of Virginia State University of New York, Stony Brook	David Wagner	CA IL MA VA NY
MURI Topic 22: Disruptive Fibers for Flexible Armor				
ARO	Multiscale Design and Manufacturing of Hybrid DWCNT-Polymer Fibers	Northwestern University Massachusetts Institute of Technology University of Nebraska, Lincoln	Horacio Espinosa	IL MA NE
MURI Topic 23: Network-Based Hard/Soft Information Fusion				
ARO	Unified Research on Network-Based Hard/Soft Information Fusion	State University of New York, Buffalo Pennsylvania State University Iona College Tennessee State University	James Llinas	NY PA NY TN
MURI Topic 24: Tailored Stress-Wave Mitigation				
ARO	Design of Adaptive Load Mitigating Materials Using Nonlinear Stress Wave Tailoring	University of Illinois, Urbana-Champaign California Institute of Technology	John Lambros	IL CA
MURI Topic 25: Integrated Quantum Circuits				
ARO	Quantum-Optical Circuits of Hybrid Quantum Memories	University of Maryland University of Michigan University of California, San Diego Duke University University of Illinois, Urbana-Champaign Naval Research Laboratory ⁴	Christopher Monroe	MD MI CA NC IL DC

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MURI Topic 26: Adaptive Structural Materials				
ARO	Innovative Design and Processing of Multi-Functional Adaptive Structural Materials	Princeton University Harvard University	Ilhan Aksay	NJ MA
MURI Topic 27: Transformation Optics				
ARO	Transformation Optical Metamaterials	Duke University University of California, Berkeley Purdue University North Carolina State University	David Smith	NC CA IN NC
MURI Topic 28: Emergent Phenomena at Complex Oxide Interfaces				
ARO	Emergent Phenomena at Mott Interfaces	University of California, Santa Barbara University of California, Davis Stanford University Harvard University University of Virginia University of British Columbia ³ International Business Machines Corporation ⁴	Susanne Stemmer	CA CA CA MA VA
MURI Topic 29: Application of Systems Biology to Regenerative Medicine				
ARO	Signalling Network Interactions Controlling Mouse and Salamander Limb Regeneration	Tulane University University of California, Irvine University of Kentucky	Ken Muneoka	LA CA KY
MURI Topic 30: Mechanisms of Bacterial Spore Germination				
ARO	Mechanism of Bacterial Spore Germination and Its Heterogeneity	University of Connecticut Health Center University of Pittsburgh East Carolina University Oregon State University	Peter Setlow	CT PA NC OR

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MURI Topic 31: Opportunistic Sensing				
ARO	Opportunistic Sensing for Object and Activity Recognition from Multi-Modal, Multi-Platform Data	Rice University University of Maryland, College Park University of Illinois, Urbana-Champaign Yale University Duke University University of California, Los Angeles	Richard Baraniuk	TX MD IL CT NC CA
MURI Topic 32: Cyber Situation Awareness				
ARO	A Cyber Awareness Framework for Attack Analysis, Prediction, and Visualization	University of California, Santa Barbara University of California, Berkeley Georgia Institute of Technology	Richard Kemmerer	CA CA GA
ARO	Computer-Aided Human Centric Cyber Situation Awareness	Pennsylvania State University Arizona State University Carnegie Mellon University George Mason University North Carolina State University University of Maryland, College Park	Peng Liu	PA AZ PA VA NC MD

***Source: U.S. Department of Defense*

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