DARPA YFA Class of 2015

Researcher	Institution	Topic Area	Title of Effort
Swaroop Ghosh	University of South Florida	Threshold Defined Logic Engines	Threshold-Defined Switches for Novel Logic Engines
Caleb Fulton	University of Oklahoma	Interference Mitigation for Digital Beam Forming	A Multi-Tiered, Systematic Approach to Digital Array Interference Mitigation
Patrick Mercier	UCSD	Reconfigurable RF Technologies	A Dynamically Reconfigurable DC-RF Power Inverter Fully Integrated in CMOS
Srabanti Chowdhury	Arizona State University	High Power GaN Transistors for RF Applications	Ultimate High Power Vertical Transistors for RF Application Using GaN and Diamond
Barry Rand	Princeton University	Transient Compound Semiconductor Devices	Compound Semiconductors for Transient Electronic and Optoelectronic Systems
Tengfei Luo	University of Notre Dame	Nanostructures for Minimizing Thermal Boundary Resistance	Nanostructure Enabled Thermal Boundary Resistance Reduction across GaN-Substrate Interfaces
Kiersten Kerby-Patel	The University of Massachusetts, Boston	Fundamental Antenna Design Principles	HIStrip: a Guided-Wave Framework for Low-Profile Antennas with High Impedance Ground Planes
Zhiru Zhang	Cornell University	A Radically More Efficient Circuit Design Methodology	Scale-Out Design Automation for Highly Productive Hardware Specialization
Janelle Ayres	The Salk Institute for Biological Studies	Microbial Mediation of Host Tolerance to Infection	Discovery of Tolerance Mechanisms: New Therapeutics for Infectious Diseases
Amanda Jamieson	Brown University	Microbial Mediation of Host Tolerance to Infection	Influence of the Lung Microbiome on Tolerance to Pulmonary Infections
Semiha Ergan	New York University Polytechnic	The Neuroscience of Architecture	Neuroscience for Architecture: Quantification of Human

DARPA YFA Class of 2015

	School of Engineering		Responsiveness in Static and Responsive Built Environments
Xue Han	Boston University	Understanding and Leveraging Biophysical Mechanisms of Acoustic Neuromodulation	New Tools and Principles for Understanding the Biophysical Mechanisms of Ultrasound Neuromodulation
David Borton	Brown University	Restoring Lower Limb Sensation through Peripheral Nerve Stimulation	Restoring Balance and Locomotion via Model-driven Sensory Stimulation within Dynamic and Diverse Environments
Stephen David	Oregon Health and Science University	Advanced Neural Modeling of Sensory Pathways	Representation of Natural Sounds in the Active Auditory System
Stefanie Tellex	Brown University	Human Robot Interaction	Reducing Errors in Human-Robot Communication with Real-Time Feedback
Stephen R. Niezgoda	Ohio State University	Novel Abstractions for Engineering Design	Computational Design Tools for Qualifying Uncertainty Due to Material Variability
George Konidaris	Duke University	Autonomy in Unstructured Environments	Bridging the Gap between Low-level Robot Control and Flexible High-level Task Planning
Amy LaViers	University of Illinois	Mathematics of Art	Choreography of Embodied, Platform-invariant Motion Primitives
Xiaobo Yin	University of Colorado	Imaging, Communication, and Sensing through Highly Scattering Complex Media	Super-resolution Photoacoustic Wavefront Shaping (SuperPAWS)
Wei Xiong	UCSD	Multidimensional Spectroscopy at the Extremes of Coherence	Heterodyned 2D SFG Spectromicroscopy-in situ Visualization Functionality

DARPA YFA Class of 2015

			Origins at Complex Nano-assembly Interfaces
Thomas Faulkner	University of Illinois	Physics, Duality, and Topology	Geometrization of Strongly Correlated Phenomena via Gauge-gravity Duality: from Fractional Quantum Hall to Quantum Entanglement
Lek-Heng Lim	University of Chicago	Geometric Approaches to Statistics and Inference	Statistical Inference on Grassmannians
Javad Lavaei	UC Berkeley	New Theoretical Approaches to High Dimensional Optimization	New Theoretical Approaches to High-Dimensional Optimization
Nanfang Yu	Columbia University	Generation of Fine-Structured Adaptive Illumination Patterns	Metasurface-Based Spatial Light Modulators

DARPA YFA Class of 2014

Researcher	Institution	Topic Area	Title of Effort
Panagiotis Artemiadis	ABOR on behalf of Arizona State University	Optimizing Supervision for Improved Autonomy	Optimizing human supervision of multi-agent systems
Spring Berman	ABOR on behalf of Arizona State University	Optimizing Supervision for Improved Autonomy	Specification and Control of Customizable Multi-Robot Systems for Distributed Sensing and Cooperative Manipulation
Emily Falk	University of Pennsylvania	Neurobiological Mechanisms of Social Media Processing	Neural mechanisms of influence, deterrence and message propagation
Necmiye Ozay	Regents of the University of Michigan	Mathematical and Computational Methods to Identify and Characterize Logical and Causal Relations in Information	Dynamics-based information extraction: a hybrid systems approach
Jarvis Haupt	Regents of the University of Minnesota	Mathematical and Computational Methods to Identify and Characterize Logical and Causal Relations in Information	Model-Based Matrix Completion: A Paradigm for Imputation, Fusion, and Inference from Multi-modal Data
Yang Jiao	ABOR on behalf of Arizona State University	Time-Dependent Integrated Computational Materials Engineering	Integrated Computational Scheme for the Characterization, Modeling and Prediction of Microstructure Evolution and Fatigue Response in Titanium Alloys
Michael Sangid	Purdue University	Time-Dependent Integrated Computational Materials Engineering	Predictive Materials Science and Fatigue Life Prognosis
Clair Sullivan	The Board of Trustees of the	Long-range Detection of Special Nuclear Materials	A New Approach to Stand-off Detection of Special Nuclear Material using Big Data Analysis

DARPA YFA Class of 2014

	University of Illinois		
Carlos Romero-Talamas	University of Maryland Baltimore County	Alternate Fusion Concepts	Simulations of spheromak formation and sustainment from multi-pulse helicity injection
Mikhail Shapiro	California Institute of Technology	New Materials and Devices for Monitoring and Modulating Local Physiology	Selective Ultrasonic Bioswitches for Precise Local Modulation of Physiology
Amin Arbabian	The Board of Trustees of the Leland Stanford Jr University	New Materials and Devices for Monitoring and Modulating Local Physiology	Highly Miniaturized Deep-Tissue Wireless Implants with Acoustic Power and Data Links
Christopher Bettinger	Carnegie Mellon University	New Materials and Devices for Monitoring and Modulating Local Physiology	Orthogonal Parameterization of Bioinspired Peripheral Nerve Interface Materials
Andrea Tao	University of California, San Diego	Methods and Theory for Fundamental Circuit-Level Understanding of the Human Brain	Plasmonic Nanoprobes for Neuronal Monitoring
Rajesh Rao Nadakuditi	University of Michigan	Methods and Theory for Fundamental Circuit-Level Understanding of the Human Brain	Topological methods for uncovering hidden structure in neural activity and connectivity
Ovijit Chaudhuri	Stanford Unviersity	Hierarchically Complex Materials that Respond and Adapt	Hierarchically Structured Hybrid Biopolymer Hydrogels for Treatment of Traumatic Injuries on the Battlefield and to Promote Long-Term Tissue Regeneration
Aaron Esser-Kahn	The Regents of the University of California, Irvine	Hierarchically Complex Materials that Respond and Adapt	Morphogenetic systems for adaption in complex materials

DARPA YFA Class of 2014

Tak-Sing Wong	The Pennsylvania State University	Hierarchically Complex Materials that Respond and Adapt	Mind-Controllable Interfacial Materials
Vivienne Sze	Massachusetts Institute of Technology	Disruptive Computing Architectures	Energy-Efficient Embedded Vision Systems
David Wentzlaff	Princeton University	Disruptive Computing Architectures	Looking Beyond the Dark, Rethinking General Purpose Computer Architecture for UAV and Space Processing
Jessica Ruyle	University of Oklahoma	Appliqué Antenna Elements for Platform Integration	Placement Insensitive Antennas Approaching Two-Dimensionality for Conformal Multi-Paltform Use
John Albrecht	Michigan State University	Modeling Phonon Generation and Transport in the Near Junction Region of Wide-Bandgap (WBG) Transistors	Modeling Phonon Generation and Transport in the Near Junction Region of Wide Band Gap (WBG) Transistors
Satish Kumar	Georgia Tech Research Corporation	Modeling Phonon Generation and Transport in the Near Junction Region of Wide-Bandgap (WBG) Transistors	Electron-Phonon Transport in High-electron Mobility Transistors including Electromagnetic Effects
Jacob Robinson	William Marsh Rice Univesity	Advanced Automation and Microfluidic Technologies for Engineering Biology	Electrophysiology-Assisted Cell Sorting (E-phACS) for High-throughput Synthetic Neurobiology
Pamela Peralta-Yahya	Georgia Tech Research Corporation	Advanced Automation and Microfluidic Technologies for Engineering Biology	Chip-based yeast engineering for the production of chemicals

DARPA YFA Class of 2014

Songbin Gong	Board of Trustees of the University of Illinois	Energy Recovery in Post-CMOS Technologies	Parametrically Excited Resonant Computing systems (PERCs)
Becky Peterson	Regents of the University of Michigan	Thin Film Transistors for High Performance RF and Power Electronics	Amorphous Oxide Thin Film Transistors for Switched-Mode Power Supplies
Thomas Serre	Brown University	Neural Inspired Computer Engineering	Scaling up computational models of visual processing in cortex
Mike Shuo-Wei Chen	University of Southern California	Neural Inspired Computer Engineering	Dual-Channel UWB Impluse-Based interconnect towards Large Scale Plastic Neural Network
Vladimir Itskov	The Pennsylvania State University	Topological Structure of Neural Representations and Neural Networks	Topological Methods for Uncovering Hidden Structure in Neural Activity and Connectivity in the Brain

DARPA YFA Class of 2013

Researcher	Institution	Topic Area	Title of Effort
Eric Brustad	The University of North Carolina at Chapel Hill	Expanding the Language of Biology	Expanding Enzyme Catalysis Through Non-Natural Amino Acids and Cofactors
Cullen Buie	Massachusetts Institute of Technology	Expanding the Language of Biology	Enabling Novel Chassis for Synthetic Biology via Rapid Field Assisted Genetic Transformation
Bradley Bundy	Brigham Young University	Expanding the Language of Biology	A Cell-Free Synthetic Biology Approach to Expand the Language of Biology
Fuzhong Zhang	Washington University in St. Louis	Expanding the Language of Biology	Biosynthesis of Non-Natural Fatty Acids for the Production of Chemicals and Advanced Biofuels
Sheng Shen	Carnegie Mellon University	Next Generation Thermal Interface Materials	Compliant and Thermally Conductive Ordered Nanostructures for Next Generation Thermal Interface Materials
Mustafa Akbulut	Texas A&M Engineering Experiment Station	Next Generation Thermal Interface Materials	Next-Generation Solders Involving Dispersion of Soft Ligand Functionalized Boron Nitride Nanoribbons or Nanosheets in Alloys as Thermal Interface Materials (TIMs)
Konstantin Zeldovich	University of Massachusetts Medical School	Applications of Nonlinear Dimensionality Reduction in Bioinformatics	Robust Analysis and Prediction of Influenza Reassortment (RAPIeR)
Hai (Helen) Li	University of Pittsburgh	Probabilistic and Approximate Computing	An Adaptive Information Processing System Resilient to Device Variations and Noises

DARPA YFA Class of 2013

Omer Oralkan	North Carolina State University	Fusing the Synthetic with the Biological to Transduce Episignals for Enhanced Function	An Ultrasound-Based Noninvasive Neural Interface to the Retina
Elliot Hui	The Regents of the University of California, Irvine	Fusing the Synthetic with the Biological to Transduce Episignals for Enhanced Function	Directed Evolution of Phytochrome Absorption Spectra for Multichannel Optogenetic Cellular Interfaces
Polina Anikeeva	Massachusetts Institute of Technology	Fusing the Synthetic with the Biological to Transduce Episignals for Enhanced Function	Nanoparticle-Enabled Sensitivity of Specific Neurons to Alternating Magnetic Fields for Targeted Transcranial Magnetic Stimulation
Pieter Abbeel	The Regents of the University of California	Supervised Autonomy	Supervised Autonomy for Robotic Manipulation
Andrea Thomaz	Georgia Tech Research Corporation	Supervised Autonomy	Object-Level Communication for Human-Robot Motion Generation
Edwin Olson	The Regents of the University of Michigan	Supervised Autonomy	Mutual Modeling for Human/Robot Teaming with Minimal Communications
Sangbae Kim	Massachusetts Institute of Technology	Supervised Autonomy	A Disaster Response Robot Capable of Power Manipulation
Walter Voit	The University of Texas at Dallas	Sensory Feedback for Improved Neural-System Control	Smart Polymer Devices for Chronic Multifascicular Microstimulation
Nuh Gedik	Massachusetts Institute of Technology	Quantum Materials by Design	Time, Energy and Momentum Resolved Probing of Ultrafast Dynamics in Quantum Materials
Chris Marianetti	The Trustees of Columbia University in the City of New York	Quantum Materials by Design	Novel Functionality in Oxides via Jahn-Teller Ions: a DFT+DMFT Study

DARPA YFA Class of 2013

Gregory Fiete	University of Texas at Austin	Quantum Materials by Design	Establishing Design Principles for Strongly Correlated Quantum Materials
Jonathan Simon	The University of Chicago	Quantum Materials by Design	Photons in Gauge Fields: Spin-Hall Effect to Strong Correlations
Zhaowei Liu	University of California San Diego	High-Speed Nanophotonic LEDs	High-Speed Nanophotonic LEDs at 100GHz and Beyond
Daniel Feezell	Regents of the University of New Mexico	High-Speed Nanophotonic LEDs	High-Speed Nonpolar InGaN/GaN Light-Emitting Diodes Using Plasmonic Core-Shell Nanowires
Aaron Dollar	Yale University	Manufacturing Science for Austere Environments	Rapid Field Fabrication by Non-Experts
Jesse Rissman	The Regents of the University of California, Los Angeles	Understanding Virtual Transfer of Learning	Giving Classic Learning Principles a Virtual Makeover: Neural Correlates of Effective Retrieval of Memories Formed in a Virtual World
Jonathan Hauenstein	University of Notre Dame	Topological/Geometric Multi-Scale Analysis of Data Sets	Numerical Algebraic Geometric Methods for Data Analysis

DARPA YFA Class of 2012

Researcher	Institution	Topic Area	Title of Effort
Dirk Englund	Columbia University	Quantum Science and Technology	Chip-Integrated Timing and Inertial Measurement Using Electron Spins in Diamond
Harmut Haeffner	University of California, Berkeley	Quantum Science and Technology	Interfacing Trapped Ions With a Tank Circuit for Hybrid Quantum Devices
Benjamin Lev	Stanford University	Quantum Science and Technology	Quantum Brazovskii Physics via Fully Emergent and Compliant Optical Lattices
Holger Muller	University of California, Berkeley	Quantum Science and Technology	Cavity-based atomic rotation and acceleration sensor
Michelle Chang	University of California, Berkeley	New Physical Methods for Applied Biology	Synthetic Biology Approaches to Cellular Nanomaterials
Heather Clark	Northeastern University	New Physical Methods for Applied Biology	Lighting up the Chemistry of the Brain: Nanosciences Monitor Neurotransmitter Release
Harvinder Singh Gill	Texas Tech University	New Physical Methods for Applied Biology	Pollen Grains as Novel Vaccine-Transporters for Oral Vaccination
Julius Lucks	Cornell University	New Physical Methods for Applied Biology	A Platform for Design and Global Characterization of Light-modulated RNA Networks
Michael McAlpine	Princeton University	New Physical Methods for Applied Biology	Piezoelectric Nanoribbons for Interfaced Cellular Nanomechanics
Georg Seelig	University of Washington	New Physical Methods for Applied Biology	Nucleic Acid Circuitry for Point-of-Care Biomarker Detection and Analysis
Ryan Adams	Harvard University	Mathematics	Developing New Methods of Multi-Core Statistical Interference Towards Rapid Data Fusion and Information Extraction

DARPA YFA Class of 2012

Maria Cameron	University of Maryland	Mathematics	Methods for the Study of Rare Events
John Gunnar Carlsson	University of Minnesota	Mathematics	Strategically Allocating Resources in a Geographic Environment
Matthew Kahle	Ohio State University	Mathematics	Topology and Geometry of Random Simplicial Complexes
Mark Tygert	New York University	Mathematics	Computer-enabled Metrics of Statistical Significance
Abhay Pasupathy Narayan	Columbia University	Strongly Correlated Materials	The Two-Dimensional Limit of Strongly-Correlated Materials
James M. Rondinelli	Drexel University	Strongly Correlated Materials	Seizing the Third Dimension in Correlated Oxide Thin Films
Jaafar A. El-Awady	Johns Hopkins University	Predictive Materials Science	Micro-Mechanics Modeling of Surface Roughness Evolution
Naomi S. Ginsberg	University of California	Predictive Materials Science	Beneath the Bulk: Domain-Specific Efficiency and Degradation in Organic Photovoltaic Thin Films
Randall Goldsmith	University of Wisconsin - Madison	Predictive Materials Science	Establishing Rules for Thin Film Organic Electronic Devices
Bryan W. Boudouris	Purdue University	New Engineered Materials	Radical Polymers for Nanostructured, Next Generation Thermoelectric Devices
James Henderson	Syracuse University	New Engineered Materials	Shape-Memory-Actuated Materials for Accelerated Healing of Orthopedic Injuries in Warfighters
Andrea M. Hodge	University of Southern California	New Engineered Materials	Highly Nanotwinned Ultra High Strength Aluminum Alloys
Gap-Yong Kim	Iowa State University	New Engineered Materials	Manufacturing of High-strength, Lightweight Magnesium Panels with Hierarchical Structures

DARPA YFA Class of 2012

Krishnan S. Raja	University of Idaho	New Engineered Materials	Design and Synthesis of Ceramic Molecular Auxetic Materials
Aydin Babakhani	Rice University	Advanced Electronics	A sub-THz CMOS On-chip Antenna with an Integrated Oscillator
Muhannad Bakir	Georgia Institute of Technology	Advanced Electronics	Radical Interconnect Technologies for 3D Heterogeneous System Integration
Christopher Batten	Cornell University	Advanced Electronics	Complexity-Effective Vector Specialization for Image and Video Processing
Prem Chahal	Michigan State University	Advanced Electronics	Heterogeneous Integration of Nanodevices for THz Circuit Applications
Hyoung Koo Lee	Missouri University of Science & Technology	Advanced Electronics	Flat-Panel X-ray Sources
Qiangfei Xia	University of Massachusetts Amherst	Advanced Electronics	3D All-silicon-based Resistive Random Access Memory
Robert Deegan	University of Michigan	MEMS/NEMS	A Microfluidic Platform Actuated with Light
Neal Hall	University of Texas, Austin	MEMS/NEMS	Ultra-small, Ultra-low-noise, Broadband Acoustic Sensors
Pramod Reddy	University of Michigan	MEMS/NEMS	Nanoscale Engineering of Interfacial Thermal Transport in HEMTs for Improved Reliability
Evan Reed	Stanford University	MEMS/NEMS	NEMS with 2D engineered piezoelectric materials
Matteo Rinaldi	Northeastern University	MEMS/NEMS	Un-cooled Nanomechanical Infrared/THz Detectors Based on Piezoelectric Resonant Nano Plates
Mikhail Belkin	University of Texas, Austin	Photonics and Lasers	Room-Temperature High-Power Terahertz Semiconductor Laser Sources

DARPA YFA Class of 2012

Amy Foster	Johns Hopkins University	Photonics and Lasers	Three-dimensional Integration of CMOS-compatible Nonlinear Photonic Circuits
Chris Giebink	Pennsylvania State University	Photonics and Lasers	Organic Photonics: Enabling Complex Index Modulation for Optical Isolation and Switching in Next-generation Plastic Fiber Networks
Wei Jiang	Rutgers, The State University of New Jersey	Photonics and Lasers	High Speed Spatial Light Modulator (SLM) with Flexible Inter-pixel Processing
Jongseung Yoon	University of Southern California	Photonics and Lasers	Conformal, Flexible Assemblies of Ultrathin, Microscale VCSEL Arrays Towards Wearable and Implantable Integrated Optical Diagnostic and Therapeutic Platform
Wojciech Matusik	Massachusetts Institute of Technology	Digital Direct Manufacturing	High-fidelity Mapping From Specification to Fabrication
Alaa Ahmed	University of Colorado	Neuroscience	Influence of Threat on Decision Making under Risk: A Neuroeconomic Approach to Movement Control
William Killgore	Harvard Medical School	Neuroscience	Multimodal Neuroimaging to Predict Cognitive Resilience Against Sleep Loss
Chet T. Moritz	University of Washington	Neuroscience	A Brain-Machine-Spinal Interface BMSI to replace and repair the injured nervous system
Dario Pompili	Rutgers, The State University of New Jersey	Neuroscience	Towards Real-time Vital Sign Data Processing in Mobile Computing Grids for Advanced Operational Neuroscience
Matthew Lease	University of Texas, Austin	Computational and Quantitative Social, Decision, and Behavioral Sciences	Blending Crowdsourcing with Automation for Fast, Cheap, & Accurate Analysis of Spontaneous Speech

DARPA YFA Class of 2012

William Rand	University of Maryland	Computational and Quantitative Social, Decision, and Behavioral Sciences	Intelligent Interfaces for Social Media: Monitoring, Modeling and Engaging in Online Conversations
Daniel Goldman	Georgia Institute of Technology	Robotics	Towards a Terramechanics of Heterogeneous Granular Media
Hadas Kress-Gazit	Cornell University	Robotics	Autonomous robots: Explaining failures and boosting success of high-level tasks
Carmel Majidi	Carnegie Mellon University	Robotics	Soft Machines and Electronics for Bio-inspired Robots and Wearable Assistive Technologies

DARPA YFA Class of 2011

Researcher	Institution	Topic Area	Title of Effort
Anastassia Alexandrova	UCLA	Functional Materials	The Inside-Out Design of Artificial Metallo-Enzymes with Unprecedented Specificity and Reactivity
Dimitris Anagnostou	SD School of Mines & Technology	Advanced Electronics	Basic Research on Autonomous and Multi-Reconfigurable Antenna Arrays
Joseph Bardin	University of Massachusetts	Advanced Electronics	Programmable Front-Ends in Advanced Technologies
Xing Cheng	Texas A&M	MEMS/NEMS	Surface-Phonon-Polariton-Enhanced Infrared Antennas for Exceptionally Sensitive Chemical Detection
Dino Di Carlo	UCLA	New Physical Methods for Biological Characterization and Control	High-Throughput Mechanical Characterization of Cell State and Function
Brian Floyd	North Carolina State University	Advanced Electronics	Interferometric Imaging Using Reconfigured Millimeter-Wave Phased Arrays in Silicon (IIRIS)
Mark Foster	Johns Hopkins University	Photonics and Lasers	SWiPhT: Scalable Ultra-High-BandWidth Photonic Transmultiplexer
Mahmoud Hussein	University Of Colorado	Structural Materials	Vibration Isolation via Directional Subwavelength Dissipation
Michael Jewett	Northwestern University	Functional Materials	Synthesis of Sequence-Defined Vinyl Polypeptides for Functional Biohybrid Materials
Hanseup Kim	University of Utah	MEMS/NEMS	Infinite-Loop Micro Circulatory Gas Chromatograph (MCCG)
Rafal Komendarczyk	Tulane	Mathematics	Topological Invariants of Fluid Flows

DARPA YFA Class of 2011

Rouslan Krechetnikov	UCSB	Mathematics	Low-Dimensional Modeling and Identification of Finite-Amplitude Instabilities in Complex Systems
Harish Krishnaswamy	Columbia University	Advanced Electronics	Active Waveguides on Silicon for Sub-mmWave/Terahertz Electronics
Minjoo Larry Lee	Yale University	Photonics and Lasers	InGaAs Quantum Dots on GaP/Si: A New Platform for Si-Based Light Emitters
Sang-Hyun Oh	University of Minnesota	MEMS/NEMS	Stretchable Plasmonic Devices with Sub-1-nm Critical Dimensions
Christine Payne	Georgia Tech	New Physical Methods for Biological Characterization and Control	Intracellular Synthesis of Conducting Polymer Nanowires for Electrical Stimulation and Sensing
Balakanapathy Rajaratnam	Leland Stanford Junior University	Mathematics	Rigorous Mathematical Foundations for Network Analysis
Mark Foster Riedl	Georgia Tech	Computational and Quantitative Social, Decision, and Behavioral Sciences	Automated Narrative Reasoning for Training Adaptive Leaders and Warfighters
Robert Rioux	Penn State	Power and Energy	Lignin Depolymerization by Surface Organocatalysts in Ionic Liquids
Raymond Rumpf	University of Texas, El Paso	Digital Direct Manufacturing	Direct Digital Manufacturing of 3D Metamaterial Devices
Vito Scarola	Virginia Polutechnic Institute & State University	Quantum Science and Technology	Emulating Strongly Interacting Quantum Matter with Optical Lattices
Thomas Schibli	University Of Colorado	Photonics and Lasers	Monolithic Ultrafast Solid-State Lasers

DARPA YFA Class of 2011

David Schuster	University of Chicago	Quantum Science and Technology	Quantum Memories and Ultrasensitive Spin Detection Using Superconducting Circuits
Sanjiv Sinha	University of Illinois	MEMS/NEMS	A Circuit-Level Directional Heat Spreader for Short Time Scale Transients
Rifat Sipahi	Northeastern University	Neuroscience	Model-Free Algorithms to Assist and Control Human-Task Missions against Dynamic Environments
Nathan Sniadecki	University of Washington	New Physical Methods for Biological Characterization and Control	A BIOMEMS Platform for Coagulation Testing
Mark Styczynski	Georgia Tech	New Physical Methods for Biological Characterization and Control	Identifying Allosteric Metabolite-Protein Interactions for Engineering Therapeutics
Zeeshan Syed	University Of Michigan	Neuroscience	Computational Neuromarkers
Yayoi Takamura	University of California, Davis	Functional Materials	Interface Controlled Functionality in Perovskite Oxide Superlattices
Hakan Tureci	Princeton	Photonics and Lasers	Engineering Complex Photonic Media for High-Performance Compact Coherent Light Sources
Edo Waks	University of Maryland	Quantum Science and Technology	Ultra-Fast Quantum Information Processing Using Quantum Dot Spin Coupled to Photonic Crystals
Xudong Wang	University of Wisconsin System	Power and Energy	Piezoelectric ZnO Nanomembranes for Flexible Nanogenerators
Kristina Winbladh	University of Delaware	Computational and Quantitative Social, Decision, and Behavioral Sciences	iMuse: Interactive Model-Based Use-Case and Storytelling Environment

DARPA YFA Class of 2011

Xiaodong Xu	University of Washington	Quantum Science and Technology	Dynamically Tunable Mid-Infrared Quantum Optoelectronics Based on Bilayer Graphene
Jie Xu	Washington State University	New Physical Methods for Biological Characterization and Control	Ear on a Chip: Microfluidics for Characterization and Control of Hair-Cell Sensing with Acoustic Stimuli
Bin Yang	Washington State University	Power and Energy	Jet Fuel Production from Biomass-Derived Lignin in Remote Locations
Peng Yin	Harvard	Functional Materials	Programmable Inorganic Materials Synthesis with DNA Nano-Structures
Xiao-Dong Zhou	South Carolina	Power and Energy	High Power and Long Life SOFC Systems Powered by JP-8
Olesya Zhupanska	University of Iowa	Structural Materials	Investigation of Multi-Field Interactions in Composites: Towards Achieving Multi-Functionality

DARPA YFA Class of 2010

Researcher	Institution	Topic Area	Title of Effort
Andrew Houck	Princeton University	Quantum Science and Technology	Scanned Probe Cavity Quantum Electrodynamics
Brian D'Usro	University of Pittsburgh	Quantum Science and Technology	Quantum Interactions of a Graphene Nanomechanical Oscillator with a Single Spin
Chuanwei Zhang	Washington State University at Pullman	Quantum Science and Technology	Induced Topological Order and Quantum Computation in Fermionic Cold Atom Superfluids
Martin Zwierlein	Massachusetts Institute of Technology	Quantum Science and Technology	Strongly Interacting Fermi Gases in Lower Dimensions
Thomas Knotts	Brigham Young University	Applied Biology, Biomedical Devices and Bioinformatics	Predicting Protein Behavior on Surfaces for Improved Design of Protein Arrays
Emily Gibson	University of Colorado, Denver	Applied Biology, Biomedical Devices and Bioinformatics	Integration of Microfluidic Devices with Nonlinear Spectroscopy for Flow Cytometry and Bioagent Detection
Howard Salis	Pennsylvania State University	Applied Biology, Biomedical Devices and Bioinformatics	Rational Design of Nucleic Acid Drugs to Control Metabolism and Kill Pathogens
Andrew Blumberg	University of Texas at Austin	Mathematics	Applied algebraic topology: Categorical foundations, topological statistics, and practical implementations
Jason Morton	Pennsylvania State University	Mathematics	Kernel Counting
Youping Chen	University of Florida	Structural Materials	Predicting Materials Properties from their Microstructural Architecture
Yashashree Kulkarni	University of Houston	Structural Materials	Computational Modeling of Grain Stability in Nanostructured Materials

DARPA YFA Class of 2010

Aaron Lindenberg	Stanford University	Functional Materials	All-optical control of nanoelectronic devices
Gregory Engel	University of Chicago	Functional Materials	Coherent Energy Transfer in Novel Excitonic Materials for High Speed Large Area Sensors and Efficient On-Pixel Data Processing
Artem Oganov	Stony Brook University	Functional Materials	Novel computational methodologies for nananoscale design of functional materials
Yu Huang	University of California, Los Angeles	Power and Energy	Design of Broad Spectrum Solar Energy Harvesting Antenna for Organic Photovoltaics
Yongsheng Chen	Pennsylvania State University	Power and Energy	Catalyst Deactivation in Steam Reforming of Liquid Hydrocarbons to Produce Hydrogen for Fuel Cell Power Generation
Krishna Mandal	University of South Carolina	Power and Energy	Quantum Cutting Core-Shell Nanocrystals for Enhanced Solar Cell Efficiency
Mona Jarrahi	University of Michigan	Advanced Electronics	Plasmonics-Enabled Ultra-Short Carrier Lifetime Photoconductors for High Power Terahertz Generation
Alyosha Molnar	Cornell University	Advanced Electronics	Bio-inspired optical image compression in CMOS
N. Peter Armitage	Johns Hopkins University	Advanced Electronics	Invention, Development, and Application of a Time domain THz Ellipsometer
Xiaojing (John) Zhang	University of Texas at Austin	MEMS	Patterned Plasmonic Surfaces on MEMS
Dana Weinstein	Massachusetts Institute of Technology	NEMS	Mutli-GHz Acoustic Resonance in Transistors

DARPA YFA Class of 2010

Chuan-Hua Chen	Duke University	NEMS	A Planar Thermal Diode
Kripa Varanasi	Massachusetts Institute of Technology	Photonics and Lasers	Looking Around Corners using Transient Imaging
Lin Zhu	Clemson University	Photonics and Lasers	On-chip coherent combining of angled-grating-confined broad-area semiconductor lasers
Ramesh Raskar	Massachusetts Institute of Technology	Photonics and Lasers	Looking Around Corners using Transient Imaging
Ozdal Boyraz	University of California, Irvine	Photonics and Lasers	Nitride Semiconductor Single-Photon Emitters and Photon Entanglement
Pei-Cheng Ku	University of Michigan	Photonics and Lasers	Nitride Semiconductor Single-Photon Emitters and Photon Entanglement
Manuel Gamero-Castano	University of California, Irvine	Manufacturing Science and Technology	Nanodroplet Beam Sputtering for Very Fast Milling and Micromachining of Inert Materials
John Johnson	Kent State University	Neuroscience	Targeting Stress Resilience Without Detriment to Adaptive Stress Response
William Tyler	Arizona State University	Neuroscience	The Development of Pulsed Ultrasound for Noninvasive Neural Interfaces
James Caverlee	Texas A&M University System	Computational and Quantitative, Social, Decision, and Behavioral Sciences	Personalized Monitoring of the Real-Time Social Web
Abel Rodriguez	University of California, Santa Cru	Computational and Quantitative, Social, Decision, and Behavioral Sciences	Dynamic Social Modeling: Estimation and Optimal Intervention Design

DARPA YFA Class of 2009

Researcher	Institution	Topic Area	Title of Effort
Scott Aaronson	Massachusetts Institute of Technology	Quantum S&T	Basic Unresolved Questions about the Capabilities of Quantum Computers
David Arnold	University of Florida	Power & Energy	Microelectromechanical Inductors for Switch-Mode Power Converters
Alan Aspuru-Guzik	Harvard University	Quantum S&T	Practical Quantum Simulators
Debra Auguste	Harvard University	Functional Materials	Colloid Morphogenesis
Jonathan Boyd	West Virginia University	Bio-Info-Micro	Natural Designs for Network Threats
Jennifer Cha	University of California, San Diego	Manufacturing S&T	Manufacturable Approaches for Nanometer Resolution Patterning
Adam Cohen	Harvard University	Functional Materials	Molecular spintronics: nanomagnetic control of electronic spins
Baratunde Cola	Georgia Institute of Technology	Power & Energy	Photothermal Enhanced Carbon Nanotube Rectenna Arrays for Solar Energy Conversion
Mary Comer	Purdue University	Mathematics	Automated Segmentation of Micrographs
Christopher Dames	University of California, Riverside	Power & Energy	Ballistic-Elastic Thermal Rectification in Asymmetric Nanostructures
Kevin Dorfman	University of Minnesota	Bio-Info-Micro	Nanopost Array for DNA Fingerprinting
Julia Greer	California Institute of Technology	Structural Materials	Bio-Inspired Design of Damage-Tolerant Materials
Jack Harris	Yale University	Quantum S&T	Quantum Optomechanics
Todd Hastings	University of Kentucky	Manufacturing S&T	Nanoscale ElectronBeam Induced Processing using Liquid Reactants
Amy Herr	University of California, Berkeley	Bio-Info-Micro	An Integrated Micro/Nanosystem for Rapid Validation of Traumatic Brain Injury (TBI) Biomarkers

DARPA YFA Class of 2009

R. Jason Jones	University of Arizona	Photonic/Lasers	Two-Color Phase Coherent High Power Laser System for Efficient Generation of Light at Extreme Wavelengths
Wendy Kelly	Georgia Institute of Technology	Bio-Info-Micro	Biosynthetic engineering of thiopeptide antibiotics
Xiuling Li	University of Illinois	Micro/Nano-Electronics	III-V Nanowire Fin FET on Silicon: A Bottom-up CMOS Compatible Approach
Jennifer Lu	University of California Merced	MEMS/NEMS	3D Electromechanical System: Nanoscale Power Generator
William Oates	Florida State University	Structural Materials	Field-coupled Mechanics and Nonlinear Control of Photo responsive Adaptive Structures
Stanley Pau	University of Arizona	MEMS/NEMS	Microchip Ion Trap
Scott Phillips	Pennsylvania State University	Functional Materials	Autonomous Materials
Kevin Pipe	University of Michigan	Micro/Nano-Electronics	Heat Sinks for Ballistic Phonons
Stefan Preble	Rochester Institute of Technology	Photonic/Lasers	Silicon Nanocrystal 100 Gb/s Electro-Optic Modulator
Beth Pruitt	Stanford University	MEMS/NEMS	MEMS-Based Water Quality Detection
Irfan Siddiqi	University of California, Berkeley	Quantum S&T	Superconducting Nanobridge Junctions for Quantum Information Processing
Jake Soper	Georgia Institute of Technology	Power & Energy	Redox-Active Ligand-Mediated RadicalCoupling at Terminal Metal Oxo Ligands: Reactions Relevant to Water Oxidation for Artificial Photosynthesis
Russell Tedrake	Massachusetts Institute of Technology	Mathematics	Learning Supermaneuverable Flight
Samuel Thomas	Tufts University	Functional Materials	Sensing with Chemically-Directed Electrostatic Self-Assembly
Doris Tsao	California Institute of Technology	Neuroscience	Brain Mechanisms for Navigation in Primates

DARPA YFA Class of 2009

Douglas Weibel	University of Wisconsin	Bio-Info-Micro	Engineering Emergent Behavior in Microbial Communities
David Wentzloff	University of Michigan	Micro/Nano-Electronics	3D Wireless Interconnect for Crossbar Routing in Many-Core Processors
Jonathan Wisor	Washington State University	Neuroscience	Local sleep in the cerebral cortex: a tool for sustained operations

DARPA YFA Class of 2007

Researcher	Institution	Title of Effort
Abbasour-Tamijani, Abbas	Arizona State University	Programmable Acoustic Filters Based on Silicon Microstructures
Afshari, Ehsan	Cornell University	Optotronics: Optically Inspired Electronics
Averitt, Richard	Boston University	Metamaterial Enhanced MEMS for Terahertz Technology
Bank, Seth	University of Texas at Austin	Compact, High-Efficiency, MidInfrared Dilute-Nitride Diode Lasers
Bergbreiter, Sarah	University of Maryland, College Park	Silicon/Elastomer Components for Autonomous Jumping Microrobots
Bhave, Sunil	Cornell University	Silicon Opto-Acoustic Oscillator
Buehler, Markus J.	MIT	Bio-Inspired Nano-Engineered Hierarchical Structures for Adaptive Thermal Management
Bunch, Joseph	University of Colorado, Boulder	Graphene Membrane
Cloutier, Sylvain	University of Delaware	Low-Cost Chip-Integrated Small FormFactor Random Lasers for Advanced High-Speed Opto-Electronic Hybrid Circuits
Drndic, Marija	University of Pennsylvania	Electrical Multiple Exciton Generation (MEG) Detection in Semiconductor Nanocrystals and the Development of Efficient and Tunable Single Nanocrystal Photodectors
Hart, A. John	University of Michigan	Hybrid Nanostructure Arrays for Microand Nano-scale Energy Conversion and Storage
Hashemi, Hossein	University of Southern California	Silicon-based Ultra Wideband Camera for Spatial and Spectral Awareness
Her, Tsinghua	University of North Carolina, Charlotte	Gain-Guiding in Photonic Bandgap Fibers: A New Paltform for Ultra HighPower Lasers and Amplifiers
Hidrovo, Carlos	University of Texas at Austin	High Speed Droplet Flows: Microscale Total Analysis and Thermal Management Systems Applications
Jiang, Hongrui	University of Wisconsin, Madison	Super Artificial Eyes (SAE)
Jovanovic, Igor	Purdue University	Direct Temporal Pulse Shaping Via Phase-Sensitive Three-Wave Mixing
Keiko Luscombe, Christine	University of Washington	Nanostructures for Optimal Energy Harvesting

DARPA YFA Class of 2007

Leuenberger, Michael	University of Central Florida	High-Temperature Electrially Driven Mbps Single-Photon Source at Telecom Wavelengths
Li, Yifei	University of Massachusetts, Dartmouth	Integrated Photonic Frequency Mixer
Ma, Zhenqiang (Jack)	University of Wisconsin, Madison	Toward 3D Si Photonics: DBR-Free VCSELs on Si Enabled with Manufacturable Nanomembrane Stacking
Oldham, Kenn	University of Michigan	Energy Efficient Piezoelectric Servo Control for Micro-Robotics
Palacios, Tomás	MIT	On-Wafer Integration of Nitride and Silicon CMOS Electronics
Park, Harold	University of Colorado, Boulder	Novel Multiscale CAE Tools for Surface-Dominated NEMS
Pennathur, Sumita	University of California, Santa Barbara	Portable, Efficient Electrokinetic Energy Generation using a Novel Graphene based Nanofluidic Device
Pop, Eric	University of Illinois, Urbana-Champaign	Femto-Joule Atomic-Scale Reversible Switch
Rana, Farhan	Cornell University	Terahertz Plasmon Oscillators: Lasers for Circuits
Reano, Ronald	Ohio State University	All-Dielectric Doubly Resonant RF/Optical Degenerate Band-Edge Crystal Antenna
Ricketts, David	Carnegie Mellon University	Spin-torque Oscillators for Spectrumagile RF
Sharping, Jay	University of California, Merced	Wideband Quantum Frequency Conversion in Optical Fibers: Enabling Transparent Quantum Information Processing
Tan, Wei	University of Colorado, Boulder	Highly Selective, Stable and Manufacturable Nano-Bio-Sensor
Tutuc, Emanual	University of Texas at Austin	Germanium Nanowire Gate All Around Tunneling Field Effect Transistors
Vasilyev, Michael	University of Texas at Arlington	Coherent Nonlinear-Optical Image Processing in Plasmonic Metamaterial
Vuckovic, Jelena	Stanford University	Ultrafast Optical Switches Controlled at a Single Photon Level
Wakin, Michael B.	University of Michigan	Geometric Methods for Compressive Multi-Signal Processing
Wang, Chunlei	Florida International University	Fabrication of Nano Fractal Electrodes for On-Chip Supercapacitor Application
Wang, Evelyn N.	MIT	Tunable Nanostructured Arrays for Stable High-Flux Microchannel Heat Sinks

DARPA YFA Class of 2007

Williams, Benjamin	University of California, Los Angeles	Nanowire Heterostructure Intersublevel Optoelectronics
Yang, Ronggui	University of Colorado, Boulder	Surface-Plasmon Enabled High Efficiency Thermoelectric Devices
Zheng, Xiaolin	Stanford University	Cell Motion-Based Toxin Detector Using Nanowires

DARPA YFA Class of 2006

Researcher	Institution	Title of Effort
Chee Wei Wong	Columbia University	Nonlinear signal processing in silicon photonic crystal nanocavities
Benton Calhoun	University of Virginia	Sub-threshold FPGAs for Ultra-Low-Power Applications
Robert Wood	Harvard College	At-Scale Insect Aerodynamics and Creation of Winged Robots
Hooman Mohseni	Northwestern University	Electrically Tunable Quantum Dots for Adaptive Infrared Imaging
Mark Johnson	NC State University	Demonstration of Epitaxial MOS for Nitride Semiconductors
Olgica Milenkovic	University of Colorado	Belief Propagation Algorithms for Compressed Biosensing
Marc Christensen	Southern Methodist University	Active Illumination for Adaptive Multi-resolution Sensing
Greg Walker	Vanderbilt University	Thermal Rectification Using Nanostructured Materials
Farinaz Koushanfar	Rice University	Symmetric Variability-Based Integrated Circuits Metering
Ville Kaajakari	Louisiana Tech	Porous silicon for MEMS vacuum packages
Jamie Phillips	University of Michigan	Oxide Electronics for Integrated Microsystems and Displays
Katherine Zhang	Boston University	Micro- and Nano- Mechanics of Thin Films and Coatings
James Buckwalter	University of California, San Diego	High-Voltage Soliton Circuits in Silicon Germanium
Hang Lu	Georgia Tech	Hybrid Biometric MEMS for Detecting Water Contamination
Gu-Yeon Wei	Harvard College	Switch-Mode Power-Supply Regulators for Chip Multiprocessors
Yoav Peles	Rensselaer Polytechnic Institute	Exploiting cavitation to power submerged microdevices
Thomas Murphy	University of Maryland	Linearized Electro-optic Phase Modulation
Kamran Mohseni	University of Colorado	Thermal Management with Digitized Heat Transfer
Dennis Akos	University of Colorado	Software Based Detection System for Satellite Navigation
Xinming Huang	Worcester Polytechnic Institute	Dynamically Reconfigurable Microsystems

DARPA YFA Class of 2006

David Brooks	Harvard College	µWatt Computing - Architectures for Wireless Sensors
Manal Omary	Texas Woman's University	Phosphorescent PLEDs
Hod Lipson	Cornell University	3D Digital Printer for Desktop Microfabrication
David Erickson	Cornell University	Integrated Nanosystem for Autonomous Health Monitoring