Research Announcement

Young Faculty Award (YFA) 2026

Defense Sciences Office

DARPARA2502

Amendment 3

December 8, 2025

This Research Announcement (RA) constitutes a public notice of a competitive funding opportunity as described in 2 CFR § 200.203. Any resultant negotiations and/or awards will follow all laws and regulations applicable to the specific award instrument(s) available under this RA.

OVERVIEW INFORMATION:

- **Federal Agency Name** – Defense Advanced Research Projects Agency (DARPA), Defense Sciences Office (DSO)
- **Funding Opportunity Title** – Young Faculty Award (YFA)
- **Announcement Type –** Amendment
- **Funding Opportunity Number** – DARPARA2502
- **Assistance Listing Number:** 12.910 Research and Technology Development
- **Dates/Time – All Times are Eastern Time Zone (ET)**
  - Posting Dates:
    - Initial Announcement: September 30, 2025
    - Amendment 1: October 9, 2025
    - Amendment 2: November 12, 2025
    - Amendment 3: December 8, 2025
  - Executive Summary Due Date: October 15, 2025, 4:00 p.m.
  - Question Submittal Closed: January 9, 2026, 4:00 p.m.
  - Proposal Due Date: January 20, 2026, 4:00 p.m.
- **Anticipated Individual Awards** – Multiple awards are anticipated.
- **Anticipated Funding Available for Award:** Each award will include a 24-month base period (a maximum of $500,000) and a 12-month option period (a maximum of $500,000). Each 12-month interval of the base period shall not exceed $250,000. Each award also has the potential for additional options concurrent to the base for a United States (U.S.) Person Graduate Student, not to exceed $350,000.
- **Eligibility:** Proposers must be employed at a U.S. institution in a current tenured track faculty position, tenured faculty within 3 years of their tenure date, or an equivalent at a non-profit research institution within 12 years of the receipt of their doctorate. Proposers who have received funding greater than $500,000 from DARPA or $1,250,000 from all DoD sources combined as either a prime or subawardee are not eligible to apply for the YFA program. Citizens of China, Cuba, Russia, Iran, Venezuela, and North Korea are not eligible to propose. Additional eligibility information is available in Section IV.
- **Executive Summaries:** Prior to submitting a full proposal, proposers are ***strongly encouraged*** to first submit an executive summary. As the YFA is considered a mentorship program, submission of a proposal is ***strongly discouraged*** if a proposal is not recommended for submission based on the executive summary.
- **Types of Instruments that May Be Awarded** – Cooperative Agreements
- **NAICS Code**: 541713, 541714, 541715, 541720
- **Agency contact**

  Contact the RA Coordinator for this effort at: YFA2026@darpa.mil

Section I: Funding Opportunity Description

A. Introduction

The Defense Advanced Research Projects Agency (DARPA) Young Faculty Award (YFA) program aims to identify and engage rising stars in junior research positions in academia and equivalent positions at non-profit research institutions, particularly those without prior DARPA funding, to expose them to Department of Defense (DoD) needs and DARPA's mission to create and prevent technological surprise for national security. The YFA program will provide high-impact funding to researchers early in their careers to develop innovative new research that enables transformative DoD capabilities. Ultimately, the YFA program is developing the next generation of researchers focused on national security issues.

Before preparing an executive summary or proposal submission, proposers are encouraged to review the DARPA mission statement and current program descriptions at the DARPA website https://www.darpa.mil to familiarize themselves with examples of current DARPA investments. This is not meant as instruction to duplicate those efforts, but rather to illustrate that current programs are aimed at research that will substantially advance our capabilities in these areas. Once awards are made, each YFA program performer will be assigned a DARPA Program Manager (PM) with interests closely related to their research topic. The PM will act as project manager and mentor to the YFA award recipients.

Proposers should also familiarize themselves with the "Heilmeier Catechism." Details about the catechism and questions it seeks to answer can be found at https://www.darpa.mil/work-with-us/heilmeier-catechism.

B. Program Description/Scope

DARPA is soliciting innovative research proposals in the areas of interest to the following DARPA technical offices: Defense Sciences Office (DSO), Biological Technologies Office (BTO), Information Innovation Office (I2O), and the Microsystems Technology Office (MTO). Further detail regarding the specific technical areas of interest can be found under Section I.C "Topic Areas (TA)." Proposed research should investigate innovative approaches that enable revolutionary advances in science, devices, or systems. Specifically excluded is research that primarily results in evolutionary improvements to the existing state of practice.

Submissions responding to a TA under this Research Announcement (RA) should clearly describe the relevance and impact of the proposed concept for addressing the national security challenges identified in the TA description; the current state-of-the-art technology; new insights to address the TA challenges; a credible research plan and schedule; and critical, quantitative milestones to be pursued over the research period.

This RA seeks cooperative agreement proposals only for a research activity consisting of a 24-month base period with a maximum total funding of $500,000 over the 24 months. Each 12-month interval of the base period shall not exceed $250,000. Proposals should also include an additional 12-month option period with a maximum funding level of $500,000. Only a cooperative agreement award instrument will be issued under this RA.

DARPA is interested in expanding its pool of available, clearable personnel for future programs. In support of that goal, proposers now have the option to include an additional option effort for a

U.S. Person Graduate Student[1] in a supporting capacity on the project. Interested Proposers should include a Statement of Work (SOW) and associated cost proposal for an optional effort to run concurrently with the 24-month base period that may be exercised once an eligible graduate student has been identified and confirmed. Proposers may structure the option in a manner appropriate to their project and institutional requirements, provided that the proposed Period of Performance (PoP) remains within the 24-month base period of the initial award. For example, since it may take some time to identify an eligible graduate student, a potential option structure could be an option PoP that starts 3 months after the start of the base PoP. Since the option PoP must run concurrently with the 24-month base period, the option PoP (not to exceed 12 months), must be completed within the 21 months remaining on the base PoP. Proposers are encouraged to include travel costs for the option so the graduate student can fully participate in YFA engagement opportunities. Costs for the U.S. Person Graduate Student option period must not exceed $350,000.

A U.S. Person Graduate Student assigned under this option can only be replaced by another U.S. Person Graduate Student. If the U.S. Person Graduate Student departs before the end of the option period, and no eligible replacement can be identified, the option PoP will be de-scoped to reflect the work completed, and any remaining funds will be returned to DARPA. DARPA recognizes that identifying an eligible graduate student may take time; however, the replacement process must be executed in a timely manner to ensure continued progress with the option period.

C. Topic Areas

This RA solicits single Principal Investigator (PI) proposals for research and development in the specific TAs of interest articulated below. All submissions must align with an office, technical area, and key word.

Potential applicants are encouraged to carefully consider the descriptions of the TAs before submission. **Each submission (executive summary or full proposal) must specify ONE and only one TA for the submission** and identify this TA on the submission's cover sheet. Executive summaries and full proposals that do not clearly address a specific TA may be deemed non-conforming and may not be reviewed. DARPA reserves the right to assign a proposal or an executive summary to a different topic area than indicated by the proposer.

Prior to submitting a full proposal, proposers are ***strongly encouraged*** to first submit an executive summary. As the YFA is considered a mentorship program, submission of a proposal is ***strongly discouraged*** if a proposal is not recommended for submission based on the executive summary.

At the executive summary phase, proposing PIs are limited to submitting only a single executive summary; at the full proposal phase, proposing PIs are limited to submitting only a single full proposal. Submissions must identify a single TA under this RA. Submitting more than one executive summary or full proposal may result in all of the PI's proposal submissions being determined non-conforming and being removed from award consideration.

[1] United States Person is defined as a citizen or resident of the United States. A resident meets either the green card test or the substantial presence test for the calendar year (January 1 – December 31). https://www.irs.gov/individuals/international-taxpayers/classification-of-taxpayers-for-us-tax-purposes

1. **Coherence and Entanglement in Nuclear Processes**

   Parametric down conversion is widely used today to form pairs of entangled photons for applications in quantum information science (from sensing to computing). Recently, the entanglement of pairs of dissimilar particles (vs. photons) and of particles that are subject to the strong nuclear force (vs. electromagnetism) was demonstrated, as was coherent control of nuclear excitations using x-rays. DARPA is interested in advancing our understanding of the fundamental physics of coherence and entanglement in nuclear processes. This includes processes for the generation of entangled pairs of particles in the nuclear domain (e.g., energetic gammas and neutrons) and the understanding of the role of coherence in nuclear processes (e.g., light ion fusion reactions). Performers will explore the role of coherence and entanglement in nuclear processes for a broad range of potential future applications including novels forms of quantum information processing and power generation. Proposed approaches should quantify potential performance gains compared to classical techniques.

2. **Relativistic Quantum Information Processing with Spacetime Diamonds**

   Quantum information science has advanced from basic concepts to early demonstrations of quantum supremacy over the last decade. Implementation of quantum gates for the generation of superpositions of states, entanglement, and the control over the unitary evolution of multi-qubit systems has been advanced with a series of physical qubits in quantum circuit architectures. Relativistic quantum information science is a nascent field where recent advances point to new fundamental insights in our understanding of concepts of information and a new class of resources for quantum information processing.[2,3,4] This includes potential entanglement generation and harvesting from vacuum states in relativistic field theories and insights into entanglement generation and storage in microscopic spacetime domains (or diamonds). DARPA is interested in advancing our fundamental understanding of quantum information at the intersection of quantum physics and relativity. Performers will advance understanding and analysis of novel forms of experimental access and control of quantum resources in vacuum states and local spacetime diamonds.

3. **3D Micromachined MEMS Microsystems**

   Micro-Electro-Mechanical Systems (MEMS) resonators are ubiquitous. The invention of Deep Reactive Ion Etching (DRIE) revolutionized MEMS by enabling microfabrication of large proof-mass resonant systems. Today, silicon reflow processes create vertically smooth sidewalls, enabling sensors with large momentum and outstanding kinetic energy.

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[2] Liu, X., Zeng, C. & Wang, J. Generation of quantum entanglement in superposed diamond spacetime. Eur. Phys. J. C 85, 539 (2025)

[3] L. Van Luijik, Relativistic Quantum Fields Are Universal Entanglement Embezzlers, Phys. Rev. Lett. 133, 261602 (2024)

[4] F. Lindel, Entanglement harvesting from electromagnetic quantum fields, Phys. Rev. A 110, 022414 (2024)

DRIE 3D micromachining, however, only generates Manhattan geometries.[5] In contrast, reflow and molding of silicon, silicon dioxide, and fused silica can create 3D spherical and cylindrical geometries,[6] which creates a number of opportunities for further advancing MEMS. As a canonical example, consider the potential advantages of a perfect spherical resonator. Thermal-Elastic Damping (TED)[7] will limit a radial expansion-mode disk resonator because of thermal phonons shuttling back and forth between the edges and the top and bottom surfaces (when the edge expands, the top and bottom surfaces contract due to the Poisson effect). A perfect sphere, on the other hand, has a single surface that uniformly expands in all directions. These non-Manhattan geometries have not only been demonstrated, but researchers have also made predictable simulations through elaborate modeling of the reflow processes, opening the possibility of inverse design.[8] Furthermore, recent demonstrations of atomic layer and pulsed layer depositions of ferroelectric and electrostrictive films on sidewalls promise to provide efficient transduction in all six degrees of freedom.[9]

This YFA topic challenges the proposers to build on this collection of advances to demonstrate non-Manhattan 3D MEMS microsystems. Proposers should plan to experimentally demonstrate the theoretical limits[7] of 3D resonant microsystem properties of the system, such as quality factors, power handling, and linearity across relevant domains to the DoD (such as, but not limited to, cryogenic, harsh, hypersonic, fluidic). The results of the investigation could enable next generation sensors for Inertial, RF and Optomechanical systems.

4. Biomarkers of Mild Psychological and Neural Damage

Highly trained and capable individuals, including military servicemembers, often accumulate psychological stress and mild brain damage (sub-concussive) from non-impact, low-level blast events which impair subsequent stress responses, disrupt sleep, and blunt cognitive ability, collectively eroding performance and readiness. Critically, there is evidence that this low-grade but cumulative damage often precedes acute suicidality. The subtle yet persistent nature of these cumulative effects means it is extremely difficult to reliably detect, monitor, and/or diagnose cumulative damage of this kind. Neuroimaging lacks the sensitivity required to detect these early-stage disruptions before they accumulate into significant damage. Mental health professionals lean heavily on questionnaires for diagnosing and tracking psychiatric issues, but those rely on truthful answers and lack the sensitivity and validation often associated with more invasive medical testing in other fields. The search for blood biomarkers to

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[5] V. Milanovic, M. Last and K. S. J. Pister, "Laterally actuated torsional micromirrors for large static deflection," in IEEE Photonics Technology Letters, vol. 15, no. 2, pp. 245-247, Feb. 2003, doi: 10.1109/LPT.2002.806085.

[6] M.-C. M. Lee and M. C. Wu, "Thermal annealing in hydrogen for 3-D profile transformation on silicon-on-insulator and sidewall roughness reduction," in Journal of Microelectromechanical Systems, vol. 15, no. 2, pp. 338-343, April 2006, doi: 10.1109/JMEMS.2005.859092.

[7] R. Tabrizian, M. Rais-Zadeh and F. Ayazi, "Effect of phonon interactions on limiting the f.Q product of micromechanical resonators," TRANSDUCERS 2009 - 2009 International Solid-State Sensors, Actuators and Microsystems Conference, Denver, CO, USA, 2009, pp. 2131-2134, doi: 10.1109/SENSOR.2009.5285627.

[8] Kant, Rishi, Stanford University, Department of Electrical Engineering. 2009. “Silicon Migration as a Process for Micro/Nanofabrication.” https://searchworks.stanford.edu/view/8388169.

[9] Nicholas A. Strnad, et al; Extending atomic layer deposition for use in next-generation piezoMEMS: Review and perspective. J. Vac. Sci. Technol. A 1 September 2023; 41 (5): 050801. https://doi.org/10.1116/6.0002431.

diagnose psychologic and physiologic markers of extreme stress have thus far been difficult to pinpoint with clarity and adequate diagnostic sensitivity, making the current state of the art unsuitable for detecting more subtle damage. Wearables and their various analytics lack specificity and validation for these and other diagnostics. Needed are fundamentally new approaches to reliably detect, monitor, and/or diagnose the effects of cumulative psychological and low-grade physical brain damage.

DARPA is interested in developing biomarkers that demonstrate drastic improvements in both specificity and sensitivity for detecting, monitoring, and/or diagnosing cumulative psychological stress and mild brain damage from non-impact, low-level blast. DARPA is not interested in approaches that merely combine existing methods, nor in methods that use machine learning to build models from existing sensors (e.g., wearables, smartphones, etc.). Responses should include descriptions of the specific biomarker target and evidence (e.g., this may include data, or a theoretically-supported, quantitative, and mechanism-specific logical argument) that the target has potential to greatly exceed the current state of the art and provide robust diagnostic and therapeutic reproducibility. Non-invasive and minimally-invasive (e.g., blood, interstitial fluid, glymph samples) solutions are all within scope, but DARPA prefers methods that are easy and fast to administer.

5. The Numerical Analysis of Agentic Artificial Intelligence (AI) Interactions

There is a growing recognition that the structure of several successful AI architectures and algorithms embody analogies with traditional Numerical Analysis. Two simple examples are the connections between residual networks (ResNets) and Taylor-series-based initial value solvers and between convolutional neural networks and finite difference discretization of partial differential equations. DARPA is interested in exploring and exploiting such insights to create revolutionary AI-enabled technology breakthroughs that enhance DoD-relevant scientific modeling and warfighter capabilities. Analogies will likely exist between: (1) interactions across heterogeneous codes (e.g., multiple fidelity models, multigrid discretizations, fine/coarse scale representations of a process) and (2) interactions between heterogeneous agents in AI agentic platforms. The numerical concepts of preconditioning, operator splitting, multigrid cycles, and multifidelity Bayesian optimization could cross-fertilize the design and understanding of in-context learning, fine-tuning, and more generally agentic communications (e.g., in mixture of experts contexts).

Subjects of interest include: (a) generalizable frameworks that allow for the realization of numerical concepts as building blocks of AI architectures and/or algorithms with proposed tests; (b) tools to translate existing AI architectures and/or algorithms "back into" numerical analysis concepts; and (c) mechanisms to rapidly explore novel such numerical concepts and instantiate them in AI architectures/algorithms.

Approaches should address scientific modeling and/or knowledge extraction settings of interest to the DoD and demonstrate fruitful synergy between the Numerical Analysis and AI Domains.

6. Calibrated Plasma Measurement with Traceable Uncertainty

Accurate plasma diagnostics remain one of the central challenges in low-temperature plasma science and engineering. Plasma density is often inferred using intrusive probes whose calibration is uncertain, leading to large and frequently unquantified errors. Unlike many other physical quantities of scientific and industrial relevance, plasma density lacks a shelf-stable reference standard for benchmarking. Flux probe methods, such as the canonical Langmuir probe, introduce significant statistical and systematic uncertainties, including treatment of sheath physics, contamination, and sensitivity to the assumed electron energy distribution function (EEDF). The electron temperature is more straightforward to define in terms of measured voltages, at least under Maxwellian assumptions, but this assumption is not always justified and capturing the true EEDF is often extremely challenging.

DARPA is seeking robust, non-intrusive, plasma diagnostic methods that can provide density and EEDF measurements with calibrated and traceable uncertainty. Measurement techniques that can provide pointwise or spatially resolved results are especially powerful, but we are open to line-of-sight integrated methods as well. The long-term goal is to develop approaches that are NIST-traceable, enabling measurements that can serve as reference standards for the field, using methods that would be suitable for arbitrary plasma compositions including noble gas and/or molecular species. Equally important, because many state-of-the-art diagnostics are prohibitively expensive or complex for routine non-expert use, we additionally seek hybrid strategies using exquisitely precise, traceable measurements to calibrate simpler, more affordable techniques for widest community distribution. This two-tiered approach would broaden the impact of high-fidelity diagnostics, making repeatable, uncertainty-quantified plasma measurements accessible to a wider scientific and industrial community.

7. Enhancing Underwater Communication and Detection

The electrochemical properties of sea water severely impede in-water communications based on Radio-Frequency (RF) waves. Other methods such as optical approaches based on focused light achieve high data transfer rates but are limited in range. The strong impedance mismatch between air and water creates additional difficulties for cross-media communications. Underwater detection is also very challenging: the propagation range and spectral signature of acoustic sources is strongly modulated by the thermodynamic gradients of the water column, in both linear and nonlinear regimes. Finally, long-distance thermal sensing is hindered by the strong interactions of infrared (IR) signals with the natural vibrational modes of the hydrogen bond.

DARPA is interested in advancing the basic understanding of the mechanisms responsible for such limitations, with the objectives of: 1) informing novel approaches to enhance existing underwater communication and/or detection techniques, and/or 2) laying the scientific foundations for radically new strategies.

Proposed solutions should be developed with *ab initio* scientific approaches that describe the mechanistic interactions with the thermo-fluid-dynamic and electro-chemical state of sea water, accounting for effects of temperature, salinity and pressure (TSP), as well as the state of the water-air interface, and other biochemical and geological marine processes.

8. DNA Rapid Access Memory

Traditional DNA-based data storage emphasizes archival stability but suffers from prohibitive read/write latency.[10] This effort seeks to explore and prototype the foundational elements of a DNA-based random access memory (RAM) inspired in part by evidence that epigenetic marks such as histone acetylation bias memory allocation.[11] Within scope are programmable enzyme-driven controllers (*e.g.,* recombinases, nickases, polymerases) and strand-displacement circuits designed to achieve fast, reversible, and orthogonal manipulation of information-bearing DNA. The proposed DNA-based RAM system should incorporate mechanisms for molecular addressing, gating to regulate information flow, and refresh processes to preserve data integrity across repeated access cycles. Researchers are tasked with designing and demonstrating a laboratory-scale DNA RAM capable of random access to more than 25 KB of total data. This effort will employ *de novo* synthesized DNA sequences and will prioritize the development of robust, biologically compatible error-correction methodologies tightly integrated with molecular operations. If successful, this work will establish a new paradigm that complements archival DNA storage with low-latency, high-density, biologically inspired RAM functionality.

9. Designer Biocondensates

The classical view of cellular organization is based on membrane bound organelles that compartmentalize functions and help maintain homeostasis. Recently, a new organization paradigm has emerged that consists of tightly compacted regions of proteins and nucleic acids that mediate highly efficient processes like transcription or enzymatic catalysis. These phase-separated domains or "biocondensates" aren't bound by lipid membranes, but instead, are driven by non-covalent interactions that temporarily bring necessary factors into close spatial proximity and then later disperse. It stands to reason, that biocondensates hold the potential for designer function within the cell, enabling proximity-driven interactions between synthetic proteins or simply coordinating molecular entities that already exist. DARPA is interested in understanding the design principles of phase-separated domains to achieve bespoke outcomes for applications including crop protection or degradation of chemical and biological threats. Approaches should focus on determining the unique drivers of domain formation and protein recruitment, while avoiding disruption of endogenous cellular functions.

10. Combat-Oriented Magnetic Physiological Assessment Sensor Systems (COMPASS)

Magnetic sensors—particularly those used in physiological and medical imaging, such as optically pumped magnetometers (OPMs), superconducting quantum interference devices (SQUIDs), and related biomagnetic systems—offer unique advantages over conventional modalities such as optical, electrical, or ultrasound-based techniques. Unlike electrodes or ultrasound probes, magnetic sensors can operate without

[10] George M. Church *et al.*, Next-Generation Digital Information Storage in DNA. Science 337, 1628-1628 (2012). doi/10.1126/science.1226355

[11] Sabine Krabbe, Epigenetic control of memory formation. Science 385, 367-368 (2024). DOI:10.1126/science. doi/10.1126/science.adq8496

physically touching tissue, thereby reducing infection risk, simplifying setup, and minimizing signal distortion at the skin interface. Moreover, magnetic fields are largely unaffected by tissue inhomogeneities (e.g., bone, fat, cerebrospinal fluid), enabling more accurate localization of physiological signals than electric field-based methods.

Despite these advantages, state-of-the-art magnetic sensors face several challenges, including sensitivity to ambient magnetic noise (e.g., Earth's magnetic field), the cryogenic cooling requirements of SQUIDs, and motion artifacts introduced by physiological movements.

DARPA is interested in new magnetic sensing approaches that address these limitations. Successful concepts will demonstrate low-TRL solutions that can be further developed into field-deployable systems suitable for combat casualty care, particularly in Roles 1 and 2, where portability, autonomy, and rapid physiological assessment are essential. While SWaP (Size, Weight, and Power) optimization is not a focus of the current solicitation, the proposed technologies must be compatible with battlefield constraints—for example, systems that require cryogenic cooling will not be considered.

11. Unlocking Next Generation Separations

DARPA is interested in understanding the fundamental challenges and opportunities to develop future membrane separations with high selectivity and permeability to enhance in theatre purification operations including water and waste purification. Traditionally, the chemical industry leverages differences in chemical properties or physical properties between constituents to perform separations. Specifically important are mechanisms including novel material development and biomimetic approaches to incorporate emerging separation principles into continuous membrane-based separations including novel material development and biomimetic approaches. Approaches should address the challenges of selectivity and permeability in highly complex and/or dilute mixtures while maximizing recovery of the desired product.

12. Bioprinted Living Meta-Materials (BioLiMMa)

DARPA seeks to develop a new class of electromagnetic (EM) metamaterials (MM) made from living plant or animal tissue that can be grown or bioprinted into functional assemblies and blends into their application environments. Example structures include but are not limited to, new biopolymer textured scaffolds that can act as EM antennas, waveguides or devices. The most impactful MM properties will be developed by modeling system properties that contain live, proliferating cells and other components required for structure and sustainability in the EM/MM application space.

13. Formal Assurance and Loss of Control Containment of AI

Artificial intelligence (AI) agents are increasingly being integrated into critical decision-making and operational systems, including logistics, cyber defense, and autonomous platforms. While these agents offer unprecedented capabilities in long-horizon planning, adaptability, and execution, they also present risks of loss of control. AI agents can develop covert or strategic behaviors, such as redefining objectives, exploiting oversight gaps, or circumventing control measures, that may jeopardize mission success and operator authority.

DARPA is interested in advancing the science of *formal assurance* and *containment architectures* that enable the safe integration of powerful AI systems into Department of Defense (DoD) missions. Key priorities include methods to ensure reliable and scalable oversight of AI agents, minimize the probability of uncontrolled outcomes, and provide robust containment measures in real-world environments.

Approaches of particular interest include design-time assurance methods, such as development of trusted monitoring AIs with formally restricted capabilities, constrained architectures, mechanistic interpretability, and semantic formal verification. Complementary approaches focusing on runtime containment are also of interest, such as leveraging computationally indistinguishable simulations to introduce epistemic uncertainty, thereby preventing circumvention of oversight mechanisms, and constructing scalable monitoring frameworks. Proposals should define metrics to evaluate their proposed solutions, such as resource overhead, containment effectiveness, and scalability.

14. Control theory of Large Language Models (LLM)

Recent work in open literature adopts a control-theoretic perspective for analyzing the behavior of LLMs. LLMs are viewed as discrete stochastic dynamical systems and analysis of control-theoretic properties helps understand language model prompting. Controllability refers to the ability to steer their outputs to meet specific constraints and desired attributes, which is currently a significant challenge. Reachability refers to the set of possible output token sequences that an LLM can generate when given a specific initial state and prompt (control) inputs. Stability can capture the robustness of the model to disturbances. Observability aims to enable a deeper understanding of the internal state given the input and output token sequences. Exploring the control-theoretic properties of LLMs offers a framework for mathematically analyzing and potentially influencing their behavior. Understanding chain of thought, analyzing self-attention, controlling next-token distribution, and investigating how to control and evaluate LLMs are fundamental challenges. It is envisioned that control theory of LLMs can provide a framework to understand and manipulate LLMs as well as characterize the susceptibility of LLMs to adversarial attacks that proceed by steering to forbidden regions of meaning space through a series of engineered prompts. Proposers should both develop dynamical system models and demonstrate control-theoretic techniques validated with empirical evidence for understanding the inherent limits of controlling LLMs.

15. AI and the Future of Work: Surfacing Task-Level Opportunities for AI Adoption

Recent studies show that 95% of generative AI adoption efforts fail[12], largely because they overlook vertical context and do not tailor solutions to organizational needs. This challenge is especially pressing for the DoD, where large numbers of personnel perform the same roles across the department at scale, making effective integration and workforce upskilling critical to mission success. The central technical challenge lies in determining when, where, and how to apply AI within workflows, and, more importantly, in identifying the right task granularity in domains with limited data and

[12] Aditya Challapally, Chris Pease, Ramesh Raskar, Pradyumna Chari. "The GenAI Divide". MIT NANDA. State of AI in Business 2025.

knowledge not captured on the web and providing contextualized assessments of where AI adoption can deliver maximal benefit. Identifying repetitive, high-frequency tasks that could provide quick-wins requires analyzing long-range interactions at scale, a challenge that remains unsolved but critical for building adoption momentum. To meet this need, approaches should address the challenges of inducing and compressing fine-grained tasks at scale, creating infrastructure to identify the data and pretraining requirements that support AI-enabled upskilling interventions, and contextualizing adoption/risk assessment and smart delegation between human workers and AI systems.

16. Formal foundations for Informal Math (FIM)

Reasoning plays an increasing role in highly performant AI systems, yet formalization of adequately general notions of reasoning remains an active area of research. Consider mathematics. Informal math, the kind practiced by pure mathematicians, is by human standards quite formal. Formal math, the kind encoded in programming languages such as Lean, Agda, Isabelle, and Roq, is more formal still. Yet, these formal languages fail to capture certain characteristics of informal mathematics. DARPA is interested in understanding current and in principle limits of formal mathematics in expressing informal mathematics, and limits of both in expressing human reasoning to develop more efficient, effective, and expressive AI systems. Approaches should consider both cognitive and mathematical perspectives, make contact with modern computer (theorem) proving languages, and be realized in demonstrations of successes and failures.

17. Grounding Symbolic Robotic Knowledge

Traditional robotics research has focused considerable effort on the sensory-motor level, using techniques like deep reinforcement learning and imitation learning. DARPA is interested in robots that can be taught in ways like how people are taught, i.e., with verbal directions and demonstrations. As with people, this form of teaching requires a robot to have a rich conceptual base and extensive task-level knowledge. First generation AI tried to build such large-scale knowledge, but it was limited by two weaknesses: scale and the lack of physical grounding. This topic specifically seeks new techniques that can automatically connect symbolic concepts and symbolic representations of tasks to sensory-motor level representations. Relevant approaches might include techniques that can connect terms in an ontology to visual images using only a few examples or systems that can ground hierarchical task networks to composable motor techniques.

18. Compiler Infrastructure Beyond Traditional Compilation

Traditionally, compilers are responsible for “lowering” a source code program to an executable binary. During this one-way journey, a variety of analyses are conducted on a program, and at the end, all that analysis is discarded as it’s no longer useful. Newer “just in time” compilers will keep some of this analysis around at runtime, but it’s still a one-way journey. The multi-level intermediate representation (MLIR) effort, an open-source compiler infrastructure project, as well as growing interest in code decompilation, has led to corresponding efforts at “lifting,” which often involves reconstructing the very same analyses that were previously discarded. This YFA topic asks proposers to consider general-purpose infrastructure for lowering and lifting code,

where a traditional compiler is only one of many use cases. Other uses for this infrastructure could include debugging and verification of the compiler, more sophisticated linkers, verifying hand-tuned assembly routines for equivalence to original high-level code, safe foreign-function integration across different programming languages, or verification of properties beyond what the source code language might easily express (e.g., verifying cryptographic code for constant runtime, or for correct handling of secret values).

19. Molecular Machines for Advanced Materials

Traditionally, polymeric materials discovery has relied on synthetic chemistry as the main approach to synthesizing new polymers, but current state of the art approaches cannot deliver sequence definition: control of single monomer identity and chirality over a broad range of monomers and backbone chemistries. In contrast, naturally occurring molecular machines such as the ribosome and DNA polymerase exhibit exquisite sequence definition and processivity but are limited in the backbone chemistries they can execute (amide and phosphodiester bonds).

DARPA is interested in engineering novel molecular machines capable of executing new backbone chemistries while maintaining precision, fidelity, and processivity intrinsic to naturally evolved machines. New machines capable of catalyzing carbon-carbon, carbon-silicone, and/or carbon-oxygen backbones are of particular interest. Proposals should address:

- The proposed method for designing and engineering molecular machines to perform polymerization reactions not currently achievable by natural molecular machines.
- The ability to incorporate at least three chemically distinct monomers into a *de novo* synthesized polymer (i.e., homopolymer synthesis is not in scope).
- The challenges in synthetic polymer length and error rate limitations and approaches to overcome them.
- Analytical methods and metrology to assess polymer formation and polydispersity.
- The challenges in future manufacturability of new polymers and supply chain constraints.

The ultimate goal of this YFA topic is to develop new molecular machines capable of synthesizing advanced sequence defined polymers that achieve never before seen properties and performance, reduced resource consumption, and enhanced warfighting capabilities.

20. Energy Harvesting in Lunar Regolith

The lunar surface possesses a vast reservoir of charged particulates that are a pervasive issue for lunar landings, equipment operations, scientific instrumentation, and solar energy generation on the moon due to the clingy and abrasive nature of the dust clouds they form. Yet, the abundance and potentially renewable charged matter offer novel opportunities for electricity generation directly from the lunar soil. Neutralization of the

dust and regolith could facilitate lunar landings, prolong equipment operations, and increase solar cell efficiencies, while charge extraction for power generation could augment the foundation for a lunar economy.

Triboelectric Nanogenerators (TENGs) are a class of metamaterials for direct energy conversion of ubiquitous mechanical energy or undesirable electrostatic charges into useful electrical energy. They offer a potential dynamic solution by which interfacial contact of regolith to another material induces charge transfer to convert mechanical into electrical energy. Demonstrating the reversible operation of these systems is desirable to enable self-mobilizing charge scavengers. A static solution could include a novel design of static discharge rods that act as electric pumps to pull the charge from the surrounding area, like a well water pump.

This topic seeks to develop the foundations for a technology capable of charge neutralization and dust mitigation of lunar regolith. Research areas should include emerging materials and microstructures for charge extraction and neutralization of lunar regolith simulant as well as theoretical modeling on the fundamental limits of power generation and charge neutralization. Proposers must describe an operating form factor and test methods for vacuum, abrasive, and radiation environment testing.

21. Visible and UV Photonic Integrated Circuits

Silicon materials currently support photonic integrated circuits in the near-infrared spectrum, offering significant advantages for data transmission and communications due to their increasing maturity and high-volume production capabilities. However, silicon photonics platforms face limitations in applications involving visible and ultraviolet (UV) wavelengths, such as optical and atomic clocks for position navigation and timing, underwater communications, and solar-blind high-precision spectroscopy. Silicon suffers from two-photon absorption and poor power handling, which lead to increased optical losses at higher energy and shorter wavelengths.

Emerging material systems, including lithium niobate, tantalum pentoxide, aluminum nitride-based alloys, and gallium nitride, have begun to demonstrate low optical losses in the visible and UV spectra. These materials have shown promise in enabling waveguides, modulators, splitters, lasers, and detectors. DARPA aims to advance chip-scale active photonic devices capable of generating, amplifying, guiding, and manipulating light in the UV and visible spectrum. Strong proposals should clearly present key concepts, provide theoretical and experimental evidence to support their approach, outline planned fabrication and characterization activities, establish quantitative performance metrics, and describe the potential impact of their project on compelling DoD applications.

22. Pliable Packaging for Polymorphic Power (PPPP)

As the world becomes more electrified and portable, our reliance on battery technology similarly increases. Recent work on flexible two-dimensional batteries and advancements in materials science have shown that there are paths to changing the way we design and manufacture energy storage in order to be more mechanically compliant, but one stand-out obstruction in this path is the rigid materials typically used in the packaging of these energy storage devices to reduce intrusion by moisture and oxygen.

DARPA is interested in developing new, compliant packaging methods that could mold an individual energy storage device to wildly different shapes and sizes. This not only includes the initial packaging but also methods for maintenance and repair. Relevant examples could be nonreactive membrane structures, aerosolized coatings to 'heal' intrusions, or even methods to completely obviate packaging.

23. Optical Memory for Photonic Integrated Circuits

Optical memory is a critical component for advancing integrated photonics for applications in communications, signal processing, and computing. It enables the storage and retrieval of optical data directly within photonic systems, eliminating the need to convert optical signals into electronic signals for storage. This is crucial for maintaining the speed, energy efficiency, and bandwidth advantages of photonic systems. However, achieving efficient and scalable optical memory is extremely challenging due to fundamental physical and engineering limitations. Use cases for optical memory include but are not limited to network protocols requiring buffering, analog signal processing requiring time-interleaving and deinterleaving, and synchronous data processing requiring intermediate storage.

This topic is soliciting innovative proposals for the development of volatile and non-volatile optical memory technology for photonic integrated circuits (PICs). Approaches should address the challenges of long storage times (demonstrate milliseconds to seconds) and efficiency (demonstrate loss during storage and retrieval of less than 10%). The proposed technology should have a roadmap to be compatible with PIC foundry platforms to enable scaling to large number of integrated optical memory devices.

24. Advancing Fully Integrated Microfluidic Systems

Microfluidics has emerged as a transformative platform with applications spanning molecular biology, chemical analysis, and microelectronics. At the core of active microfluidic systems are microscale mechanical devices, such as microvalves and micropumps, which enable critical functions like flow regulation, on/off switching, and fluid transport. However, the reliance on these mechanical components introduces significant challenges, including unreliability, design complexity, and the need for extensive external equipment. These limitations remain key barriers to achieving fully integrated and scalable microfluidic systems. This YFA topic seeks innovative approaches to eliminate the dependence on mechanical components and minimize the need for external equipment, paving the way for the development of fully integrated microfluidic systems that outperform traditional mechanical designs. The proposed approaches should address the following critical challenges: design complexity, material limitations, control, and scalability.

D. Program Structure

This RA seeks cooperative agreement proposals for a research activity consisting of a 24-month base period. No award type other than cooperative agreements will be issued under this RA. Each 12-month interval of the base period shall not exceed $250,000. Proposals should also include a 12-month option period with a maximum funding level of $500,000 and may include the additional U.S. Person Graduate Student option. The 12-month option period, referred to as

the “Director’s Fellowship,” will be reserved for a limited number of awardees who demonstrate exceptional YFA project performance over the 24-month base period. YFA recipients may request one No-Cost Extension (NCE) to the base PoP not to exceed 12 months. NCEs beyond 12 months for the base period require justification be submitted to the Grants Officer (GO) for consideration. To qualify for the Director’s Fellowship option period, the effort's reports must demonstrate measurable progress toward project objectives during the performance period and show that a significant portion of the received funding has been expended. The U.S. Person Graduate Student option, if requested and exercised, will not extend into the Directors Fellowship option period.

Director’s Fellowship nominations by the DARPA PM Mentor may be deferred until measurable progress toward project objectives during the performance period have been achieved and required reasonable expenditure levels have been reached, provided that deferment not surpass the Cooperative Agreement PoP, to include any requested extensions. Director’s Fellowship recipients may request one NCE for the Director’s Fellowship option PoP, not to exceed 12 months.

A target start date of August 2026 may be assumed for planning purposes.

For budgeting purposes, please plan for 3 two-day meetings in the Washington, D.C., area over the course of the 24-month base period and one additional meeting over the course of the 12-month option period. Travel proposed for non-DoD sponsored activities and events is highly discouraged, please see FAQ for more information.

Section II: Evaluation Criteria

- Proposals will be evaluated using the following criteria listed in ***descending order of importance***: Overall Scientific and Technical Merit; Potential Contribution and Relevance to the DARPA Mission; and Cost Realism.

    - **Overall Scientific and Technical Merit**:
      The proposed technical approach is innovative, feasible, achievable, and complete. The proposed technical team has the expertise and experience to accomplish the proposed tasks. Task descriptions and associated technical elements provided are complete and in a logical sequence with all proposed deliverables clearly defined such that a final outcome that achieves the goal can be expected as a result of award. The proposal identifies major technical risks, and planned mitigation efforts are clearly defined and feasible. The proposed schedule aggressively pursues performance metrics in an efficient time frame that accurately accounts for the anticipated workload.

    - **Potential Contribution and Relevance to the DARPA Mission**:
      The potential contributions of the proposed effort bolster the national security technology base and support DARPA’s mission to make pivotal early technology investments that create or prevent technological surprise. The proposed intellectual property restrictions (if any) will not significantly impact the Government’s ability to transition the technology.

    - **Cost Realism**:
      The proposed costs are realistic for the technical and management approach and accurately reflect the technical goals and objectives of the announcement. All proposed

labor, material, and travel costs are necessary to achieve the program metrics, consistent with the proposer's SOW and reflect a sufficient understanding of the costs and level of effort needed to successfully accomplish the proposed technical approach. The costs for the prime proposer and proposed subawardees are substantiated by the details provided in the proposal (e.g., the type and number of labor hours proposed per task, the types and quantities of materials, equipment and fabrication costs, travel and any other applicable costs, and the basis for the estimates).

- For additional information on how DARPA reviews and evaluates proposals through the Scientific Review Process, please see "Proposer Instructions: General Terms and Conditions." in Section III: Submission Information.

Section III: Submission Information

- All awards under this announcement will be Cooperative Agreements. Please review the following link for additional information regarding award instrument information: **Assistance Agreement Awards (Grants and Cooperative Agreements)**: Proposer Instructions: Grants/Cooperative Agreements.

- This announcement contains an executive summary phase. DARPA intends to conduct a blind review of submitted executive summaries. Institution and Key Personnel identifying information must be present on only the Executive Summary Cover Sheet, which will be separated from the remaining text prior to DARPA conducting its review. If Institution or Key Personnel identifying information is found after the Executive Summary Cover Sheet, the executive summary may be deemed non-conforming and may not be reviewed. DARPA will respond to executive summaries with a statement as to whether DARPA is interested in the idea. Regardless of DARPA's response to an executive summary, proposers may submit a full proposal. DARPA will review all conforming full proposals using the published evaluation criteria (Section II) and without regard to any comments resulting from the review of an executive summary. Proposers should note that a favorable response to an executive summary is not a guarantee that a proposal based on the executive summary will ultimately be selected for award negotiation. Executive summaries submitted in response to this announcement may anticipate a response within approximately 45 calendar days. These notifications will be sent via email to the Technical POC and/or Administrative POC identified on the Executive Summary Cover Sheet.

- Executive summaries are due October 15, 2025, at 4:00 p.m. as stated in the Overview section. Additional instructions for executive summary submission are contained within **Attachment A**. All executive summaries must be submitted through the Broad Agency Announcement Tool (BAAT). Each TA will have a separate announcement listing in BAAT (e.g. DARPARA2502-01, DARPARA2502-02, etc.) BAAT submission details are provided below in "Proposer Instructions: General Terms and Conditions."

- Full proposals are due January 20, 2026, at 4:00 p.m. as stated in the Overview section. All proposals must be submitted through Grants.gov. Grants.gov submission details are provided at this link: Proposer Instructions: Grants/Cooperative Agreements.
- **Attachments B and C** contain specific instructions and templates and constitute a full

proposal submission. Budget Justification should be provided as Section L of the SF 424 Research & Related Budget form provided via Grants.gov. The Budget Justification should include the following information for the recipient and all subawardees:

- **Direct Labor (sections A and B)** - Detail the total number of persons and their level of commitment for each position listed as well as which specific tasks (as described in the SOW) they will support.
- **Equipment (section C)** - Provide an explanation for listed requested equipment exceeding $5,000, properly justifying why it is required to meet the objectives of the program.
- **Travel (section D)** - Provide the purpose of the trip, number of trips, number of days per trip, departure and arrival destinations, number of people, etc.
- **Other Direct Costs (section F)** - Provide a justification for the items requested and explain how the estimates were obtained.
- **Participant/Trainee Support Costs (section E) -** Provide details on Tuition/Fees/Health Insurance, Stipends, Travel, and Subsistence costs.

- **RA Attachments**:
  - **(required if submitting an executive summary) Attachment A**: Executive Summary Template
  - **(required) Attachment B**: Proposal Summary Slide Template
  - **(required) Attachment C**: Proposal Instructions and Volume I Template (Technical and Management)
  - **(required) Attachment D:** Proposal Instructions and Volume II Template (Administrative and National Policy Requirements)

- **Proposer Instructions: General Terms and Conditions**

  - **System for Award Management (SAM) Registration and Universal Identifier Requirements**
    All proposers must be registered in SAM unless exempt per Federal Acquisition Regulation (FAR) 4.1102, FAR 52.204-7, "System for Award Management" and FAR 52.204-13, "System for Award Management Maintenance" are incorporated into this RA and have a valid Unique Entity ID to receive an award. All proposers must maintain an active and current SAM registration at all times throughout the award process, should they be selected. All proposers are to provide their Unique Entity ID in each proposal they submit. Click HERE to register in SAM.

  - **Content and Form of Application Submission**
    All submissions must be written in English with type not smaller than 12-point font. Smaller font may be used for figures, tables, and charts. All documents submitted must be clearly labeled with the DARPA RA number, proposer organization, and proposal title/proposal short title. All monetary references in the proposal shall be in U.S. Dollars.

  - **Electronic Invoicing and Payments**
    Awardees will be required to submit invoices for payment electronically via Wide Area Work Flow (WAWF), accessed through the Procurement Integrated Enterprise

Environment, unless an exception applies. Registration in WAWF is required prior to any award.

- **Electronic and Information Technology**
  All electronic and information technology acquired or created through an RA must satisfy the accessibility requirements of Section 508 of the Rehabilitation Act (29 U.S.C. § 749d) and FAR 39.2.

- **Patent Reports and Notifications**
  All resultant awards will contain a mandatory requirement for patent reports and notifications to be submitted electronically through i-Edison.

- **Review of Proposals**
  DARPA will conduct a scientific/technical review of each conforming proposal. Conforming proposals comply with all requirements detailed in this announcement; proposals that fail to do so may be deemed non-conforming and may be removed from consideration. Proposals will not be evaluated against each other since they are not submitted in accordance with a common work statement.

  Award(s) will be made to proposers whose proposals are determined to be the most advantageous to the Government, consistent with instructions and evaluation criteria specified in the RA herein, and availability of funding.

- **Handling of Source Selection Information**
  DARPA policy is to treat all submissions as source selection information (see FAR 2.101 and 3.104), and to disclose their contents only for the purpose of evaluation. Restrictive notices notwithstanding, during the evaluation process, submissions may be handled by support contractors for administrative purposes and/or to assist with technical evaluation. All DARPA support contractors performing this role are expressly prohibited from performing DARPA-sponsored technical research and are bound by appropriate nondisclosure agreements. Subject to the restrictions set forth in FAR 37.203(d), input on technical aspects of the proposals may be solicited by DARPA from non-Government consultants/experts who are strictly bound by the appropriate non-disclosure requirements.

- **Award Information**
  DARPA anticipates multiple awards. The level of funding for individual awards made under this RA will depend on the quality of the proposals received and the availability of funds. Awards will be made to proposers whose proposals are determined to be the most advantageous to the Government, all evaluation factors considered.

  The Government reserves the right to:
  - select for negotiation all, some, one, or none of the proposals received in response to this announcement;
  - make awards without discussions with proposers;
  - conduct discussions with proposers if it is later determined to be necessary;
  - segregate portions of resulting awards into pre-priced options;

- accept proposals in their entirety or select only portions of proposals for award;
- fund awards in increments with options for continued work at the end of one or more phases;
- request additional documentation once the award instrument has been determined (e.g., representations and certifications); and
- remove proposers from award consideration should the parties fail to reach agreement on award terms within a reasonable time or the proposer fails to provide requested additional information in a timely manner.

In all cases, the Government GO shall have sole discretion to select award instrument type, regardless of instrument type proposed, and to negotiate all instrument terms and conditions with selectees. DARPA will not award efforts under YFA that present a high likelihood of disclosing performance characteristics of military systems or manufacturing technologies that are unique and critical to defense.

DARPA aims to continuously improve the YFA program. To support this effort, DARPA may use surveys to collect information on YFA award recipients' accomplishments, long-term benefits of the mentorship program, and the career trajectories of award recipients through survey research with former, current, and incoming YFA awardees. Upon receipt of a survey, the awardee may choose not to participate and opt out at any time. The awardee's decision to participate or not to participate in surveys will not affect the decision for funding, or other relationship with DARPA.

- **Proprietary Information**
  Proposers are responsible for clearly identifying proprietary information. Submissions containing proprietary information must have the cover page and each page containing such information clearly marked with a label such as "Proprietary" or "Company Proprietary." NOTE: "Confidential" is a classification marking used to control the dissemination of U.S. Government National Security Information as dictated in Executive Order 13526 and should not be used to identify proprietary business information.

- **Organizational Conflicts of Interest (OCI)**
  Proposers shall identify and disclose all facts relevant to potential OCI, involving the proposer's organization, and any proposed team member (subawardee, consultant) in accordance with FAR 9.5. The proposer is responsible for providing this disclosure with each proposal submitted to the announcement. The disclosure must include the proposer's, and as applicable, proposed team member's OCI mitigation plan. The OCI mitigation plan must include a description of the actions the proposer has taken, or intends to take, to prevent the existence of conflicting roles that might bias the proposer's judgment and to prevent the proposer from having unfair competitive advantage. The OCI mitigation plan will specifically discuss the disclosed OCI in the context of each of the OCI limitations outlined in FAR 9.505-1 through FAR 9.505-4.

- **Agency Supplemental OCI Policy**
  In addition, DARPA has a supplemental OCI policy that prohibits contractors/performers from concurrently providing Scientific Engineering Technical Assistance (SETA), Advisory and Assistance Services (A&AS) or similar support services, and being a

technical performer. Therefore, as part of the FAR 9.5 disclosure requirement above, a proposer must affirm whether the proposer or any proposed team member (subawardee, consultant) is providing SETA, A&AS, or similar support to any DARPA office(s) under: (a) a current award or subaward; or (b) a past award or subaward that ended within one calendar year prior to the proposal's submission date.
If SETA, A&AS, or similar support is being or was provided to any DARPA office(s), the proposal must include:

- The name of the DARPA office receiving the support;
- The prime contract number;
- Identification of proposed team member (subawardee, consultant) providing the support; and
- An OCI mitigation plan in accordance with FAR 9.5.

- **Government Procedures**
  In accordance with FAR 9.503, 9.504, and 9.506, the Government will evaluate OCI mitigation plans to avoid, neutralize, or mitigate potential OCI issues before award and to determine whether it is in the Government's interest to grant a waiver. If the Government determines to grant a waiver, it will be processed after careful review of the mitigation plan. The Government will only evaluate OCI mitigation plans for proposals that are determined selectable under the announcement evaluation criteria and funding availability.

  The Government may require proposers to provide additional information to assist the Government in evaluating the proposer's OCI mitigation plan. If the Government determines that a proposer failed to fully disclose an OCI, or failed to provide the affirmation of DARPA support as described above, or failed to reasonably provide additional information requested by the Government to assist in evaluating the proposer's OCI mitigation plan, the Government may reject the proposal and withdraw it from consideration for award.

- **Agency Level Protests & Ombudsman Information**
  For information concerning agency level protests, please contact CMO_Protests@darpa.mil. Please ensure to copy the mailbox address referenced in the announcement related to the effort you are inquiring about. For any Agency Ombudsman related inquiries, please reach out to DARPA_Ombudsman@darpa.mil.

- **Unclassified Submission Instructions**
  Failure to comply with the submission procedures outlined herein may result in the submission being deemed non-conforming and withdrawn from consideration.

  DARPA requires proposers to submit UNCLASSIFIED executive summaries via DARPA's Broad Agency Announcement Tool (BAAT). If an account has recently been created for the DARPA BAAT, this account may be reused. Accounts are typically disabled and eventually deleted following 75-90 days of inactivity – if you are unsure when the account was last used, it is recommended that you create a new account. If no account currently exists for the DARPA BAAT, visit the website to complete the two-step registration process. Submitters will need to register for an Extranet account (by

clicking "Create New Account" at the URL listed above) and wait for two separate e-mails containing a username and temporary password. After accessing the Extranet, submitters may then create an account for the DARPA BAAT (via the "Register your Organization" link along the left side of the homepage), view submission instructions, and upload/finalize the proposal. Note: Even if a submitter's organization has an existing registration, each user submitting a proposal must create their own Organization Registration.

All unclassified executive summaries submitted electronically through BAAT must be uploaded as zip archives (i.e., files with a .zip or .zipx extension). The final zip archive should be no greater than 100 MB in size. Only one zip archive will be accepted per submission—subsequent uploads for the same submission will overwrite previous uploads, and submissions not uploaded as zip archives will be rejected by DARPA.

Proposers using BAAT may encounter heavy traffic on the submission deadline date; proposers should start this process as early as possible. Technical support for the DARPA RA Submission website is available during regular business hours, Monday – Friday, 9:00 a.m. – 5:00 p.m. Eastern Time. Requests for technical support must be emailed to BAAT_Support@darpa.mil with a copy to the RA email address identified in the RA. Questions regarding submission contents, format, deadlines, etc., should be emailed to the RA email address identified in the RA. Questions/requests for support sent to any other email address may result in delayed/no response.

- **Subawardee Proposals**
  The awardee is responsible for compiling and providing all subawardee proposals for the GO, as applicable. Subawardee proposals should include Interdivisional Work Transfer Agreements (ITWA) or similar arrangements. Where the effort consists of multiple portions which could reasonably be partitioned for purposes of funding, these should be identified as options with separate cost estimates for each. All proprietary subawardee proposal documentation, prepared at the same level of detail as that required of the awardee's proposal and which cannot be uploaded with the proposed awardee's proposal, shall be provided to the Government either by the awardee or by the subawardee organization when the proposal is submitted. Subawardee Senior or Key Personnel must meet the eligibility requirements for YFA listed in Section IV: Special Considerations.

- **Frequently Asked Questions**
  Administrative, technical, and contractual questions should be emailed to YFA2026@darpa.mil. All questions must be in English and must include the name, email address, and the telephone number of a point of contact. DARPA will post an FAQ list on the DARPA webpage.

Section IV: Special Considerations

- This announcement, stated attachments, and websites incorporated by reference constitute the entire solicitation. In the event of a discrepancy between the announcement, attachments, or websites, the announcement takes precedence.

- Non-U.S. organizations cannot participate in this announcement. All other responsible sources capable of satisfying the Government's needs may submit a proposal that shall be considered by DARPA. Historically Black Colleges and Universities, Small Businesses, Small Disadvantaged Businesses, and Minority Institutions are encouraged to submit proposals and join others in submitting proposals; however, no portion of this announcement will be set aside for these organizations' participation due to the impracticality of reserving discrete or severable areas of this research for exclusive competition among these entities. **Participation is open to individuals who are U.S. Citizens, U.S. Permanent Residents, and Foreign Nationals who meet the eligibility criteria listed below. Citizens of China, Cuba, Russia, Iran, Venezuela, and North Korea are not eligible to propose.**

  All proposed team members must meet these requirements:

  - Proposers and proposed team members must be one of the following (excluding any personal leaves of absence) by the full proposal deadline listed in Part One: Overview Information:
    - current Tenure-Track Assistant/Associate Professors;
    - current Tenured faculty within 3 years of their Tenure date; or
    - an equivalent at a non-profit research institution within 12 years of the receipt of their Ph.D.
  - All proposers and proposed team members must be employed at a U.S. institution, which includes those in U.S. states and territories. Proposals from outside these regions will not be accepted.
  - Individuals who have previously received a YFA Award are not eligible for this or any future YFA program.
  - Former DARPA PMs are not eligible to apply for funding under this program.
  - Researchers working at Federally Funded Research and Development Centers, University Affiliated Research Centers, National Laboratories, or other Government entities are not eligible to apply as PIs or subawardees under this program.
  - Non-U.S. individuals employed by U.S. institutions may participate to the extent that such participants comply with any necessary nondisclosure agreements, security regulations, export control laws, and other governing statutes applicable under the circumstances.
  - Proposers that have received funding greater than $500,000 from DARPA or $1,250,000 from all DoD sources combined as either a prime or subawardee are not eligible to apply for the YFA program.
- As of the time of publication of this announcement, all proposal submissions are anticipated to be unclassified.

- As of the date of publication of this announcement, the Government expects that program goals as described herein may be met by proposers intending to perform fundamental research and does not anticipate applying publication restrictions on research results (i.e.,

papers, journal articles, etc.) to individual awards for fundamental research that may result from this announcement.[13] DARPA will not select proposals for negotiation of an award if the proposal is deemed to be Applied Research, or otherwise requires Controlled Unclassified Information (CUI) restrictions. Inclusion of publication costs is highly discouraged, proposed costs should focus on program goals and objectives. For additional information on fundamental research, please visit Proposer Instructions: General Terms and Conditions.

- DARPA's Fundamental Research Risk-Based Security Review Process (formerly CFIP, now FRR-BS a.k.a. "FERBS") is an adaptive risk management security program designed to help protect the critical technology and performer intellectual property associated with DARPA's research projects by identifying the possible vectors of undue foreign influence. DARPA will create risk assessments of all proposed Senior/Key Personnel selected for negotiation of a fundamental research grant or cooperative agreement award. The DARPA risk assessment process will be conducted separately from the DARPA scientific review process and adjudicated prior to final award. For additional information on this process, please visit Proposer Instructions: Grants/Cooperative Agreements.

- Proposers that anticipate involving Human Subjects Research (HSR) or Animal Use in the proposed research must comply with the approval procedures detailed at Human Subjects and Animal Use, to include providing the information specified therein as required for proposal submission.

Additional Resources

- The APEX Accelerators program, formerly known as the Procurement Technical Assistance Program (PTAP), focuses on building strong, sustainable, and resilient U.S. supply chains by assisting a wide range of businesses that pursue and perform under contracts with the DoD, other federal agencies, state and local governments, and with government prime contractors. See https://www.apexaccelerators.us/ for more information. APEX Accelerators helps businesses:

    - Complete registration with a wide range of databases necessary for them to participate in the government marketplace (e.g., SAM).
    - Identify which agencies and offices may need their products or services and how to connect with buying agencies and offices.
    - Determine whether they are ready for government opportunities and how to position themselves to succeed.
    - Navigate solicitations and potential funding opportunities.
    - Receive notifications of government contract opportunities on a regular basis.
    - Network with buying officers, prime contractors, and other businesses.
    - Resolve performance issues and prepare for audit, only if the service is needed, after receiving an award.

[13] Press Releases announcing awards or previewing the publishing of fundamental research results are not considered to be the results of fundamental research and are subject to publication restrictions.

- Project Spectrum is a nonprofit effort funded by the DoD Office of Small Business Programs to help educate the Defense Industrial Base (DIB) on compliance. Project Spectrum is vendor-neutral and available to assist businesses with their cybersecurity and compliance needs. Their mission is to improve cybersecurity readiness, resilience, and compliance for small/medium-sized businesses and the federal manufacturing supply chain. Project Spectrum events and programs will enhance awareness of cybersecurity threats within the manufacturing, research and development, as well as knowledge-based services sectors of the industrial base. Project Spectrum will leverage strategic partnerships within and outside of the DoD to accelerate the overall cybersecurity compliance of the DIB. www.projectspectrum.io is a web portal that will provide resources such as individualized dashboards, a marketplace, and Pilot Program to help accelerate cybersecurity compliance.

- DARPAConnect offers free resources to potential performers to help them navigate DARPA, including "Fueling Innovation: Applying for the DARPA Young Faculty Award," "Understanding DARPA Award Vehicles and Solicitations," "Making the Most of Proposers Days," and "Tips for DARPA Proposal Success." Join DARPAConnect at www.DARPAConnect.us to leverage on-demand learning and networking resources.

- DSO has been using new solicitation formats to speed award timelines. These include Disruption Opportunities ((DO) also known as "Disruptioneering") and Advanced Research Concepts (ARC). These are focused, milestone-based contracts designed to reduce negotiations and emphasize the quality of the idea and its potential for disruption over the proposer's ability to write a proposal. The milestone structure, where payment is tied to research execution rather than meeting aggressive metrics, is intended to incentivize ideas with high potential for disruption even if they are riskier. We are seeking feedback regarding these mechanisms from our proposer community. Please consider completing the survey at this link: https://events.sa-meetings.com/esurvey/126974