Funding Opportunity: DOD Releases FOA for FY 2024 Vannevar Bush Faculty Fellowship

Lewis-Burke Associates LLC – July 20, 2023

The Office of Naval Research (ONR) released the fiscal year (FY) 2024 Vannevar Bush Faculty Fellowship (VBFF) funding opportunity announcement (FOA). ONR, facilitator of the program on behalf of the Undersecretary of Defense for Research and Engineering (USD(R&E)), is seeking single investigators to conduct basic, unclassified research in Department of Defense (DOD) areas of interest. Particularly, DOD is seeking ambitious “blue sky” science and engineering research proposals that could spark new, revolutionary capabilities. The program seeks to develop long-term relationships with VBFF Fellows, who go on to become experts and conveners in Defense science and technology (S&T) communities.

Applicants must identify one of the program’s scientific areas to which their proposal best corresponds. If the proposal is multidisciplinary and does not fit one area perfectly, then applicants are allowed to identify a primary and secondary scientific area or submit under the “other” category. Those areas, with more information on each of them in the full FOA, include:

1. **Applied Mathematics and Computational Science**: DOD seeks proposals that enable revolutionary computational capabilities in simulation and design of complex physical and engineered systems. These may include optimization, uncertainty quantification, numerical analysis, applied analysis, stochastics, statistics, applied geometry and topology, applied category theory, or others.

2. **Networks and Artificial Intelligence (AI)**: This area seeks novel approaches to navigate the complexity of “physical and social dynamics, co-evolving agent dynamics and network topologies, non-equilibrium and open systems, uncertain games with multiple time scales and objectives, and dynamic evolution of the rules of the game.” Also relevant is fundamental research in mathematics and computational science such as distributed optimization, geometry and topology, and multi-agent game theory.

3. **Neuroscience and Fundamentals of Cognition and Intelligence**: DOD seeks to better understand the “neural processes underlying the various levels of cognition, including learning, reasoning, and intelligence.” Revolutionary research in this area may also inform new approaches to AI development, including the reproduction of human-like capabilities, as well as enhance human capabilities like better information processing, decision-making, resilience, and communication.

4. **Fundamentals of Bioengineering**: DOD seeks multidisciplinary approaches to study biological processes that can transform critical technologies. Desired concepts include sensing modalities and self-assembled sensory networks, structural biomaterials and electronics, artificial organs, warfighter resilience and performance in highly stressful situations, and any new capabilities yet discovered.
5. **Quantum Information Science (QIS):** DOD has a high interest in this space due to its potential impact in areas such as “ensuring information security; enabling novel materials discovery and design; attaining precise navigation and positioning without GPS; greatly improving sensing (local and remote), imaging and metrology.” Proposed research should disrupt current approaches in QIS while addressing broad impacts with transformational concepts.

6. **Electronics, Photonics and Quantum Materials:** DOD seeks unconventional “approaches to the discovery and predictive design of materials that exhibit previously unattainable or unknown electronic, photonic and/or quantum functionalities.” New concepts and approaches “in unifying theoretical ideas, computational methods, tailored diagnostics, and precise synthesis to discover and design extraordinary physical properties of materials” are also desired.

7. **Material Science:** DOD seeks to discover new materials that function and perform under extreme conditions. There are rapid advancements in the “ab-initio design of materials with tailored combinations of physical characteristics, such as thermal and transport properties, chemical reactivity, mechanical strength, optical or electromagnetic responses.” Ultimately, this scientific area asks, “what are the fundamental challenges to the optimization and inverse design problems in material science?”

8. **Soft Materials and Multiscale Structures:** DOD is seeking innovative ideas and discovery regarding “the creation and design of materials and complex structures with unique properties, reaching well beyond the traditional manufacturing approaches, inorganic compounds, and compositions.” It is thought that this research can lead to “innovative sensing methodologies, accessing new spectral and dynamic regimes, fusing and synthesizing multi-model information, performing computation in the material and structure itself, providing automatic and reflexive control and adaptation.”

9. **Other Fields of Research:** Applicants can submit a research proposal to this area if their proposal does not fit one of the prior categories. All proposals must support DOD research priorities and focus on basic, transformative science that provides new thinking about the studied phenomena. The FOA specifically mentions interest in “all issues regarding information, e.g. its availability, security, capacity and speed” particularly as they relate to information warfare, dominance, and defense.

The DOD Basic Research Office will host a virtual webinar on **July 27, 2023 from 3:00-4:00 PM ET** to discuss the program. Further details and registration information for the webinar can be found at [https://dod-basicresearch.nvision.noblis.org/program/vbff](https://dod-basicresearch.nvision.noblis.org/program/vbff).

**Due Dates:** Registration is required and due by **September 15, 2023**. White papers are required and due by **September 29, 2023 at 5:00 PM ET**. They must be submitted via [https://dod-basicresearch.nvision.noblis.org/program/vbff](https://dod-basicresearch.nvision.noblis.org/program/vbff). Full proposals are by invitation only and must be received, alongside required confidential letters of recommendation, no later than **February 9, 2024 at 5:00 PM ET**. Full proposals must be submitted via [www.grants.gov](http://www.grants.gov) and letters of recommendation will be expected to be submitted via email to paula.d.barden.ctr@us.navvy.mil. White paper questions and inquiries may be submitted by **September 15, 2023**, and questions for the full proposal may be submitted by **January 19, 2024**.
**Total Funding and Award Size:** DOD anticipates granting 8-10 awards with a maximum individual award amount of $3 million over a five-year period of performance.

**Eligibility and Limitations:** The competition is open to accredited U.S. institutions of higher education with doctoral degree-granting programs. Historically Black Colleges and Universities (HBCUs) and Minority Institutions (MIs) are highly encouraged to submit or join others in a proposal. The program seeks outstanding faculty with tenure, who are either a U.S. citizen or permanent resident, to apply as the principal investigator (PI). PIs may submit only one application, but there is no limit to the number of applications an institution may submit. Non-profit and for-profit organizations may collaborate on proposed research and may receive VBFF funds via subaward or subcontract, but the program is geared towards funding research at universities.

**Sources and Additional Background:**
- The full solicitation can be found at [www.grants.gov](http://www.grants.gov) under solicitation number “N00014-23-S-F006.”
- DOD’s overview of the VBFF program can be found at [https://basicresearch.defense.gov/Programs/Vannevar-Bush-Faculty-Fellowship/](https://basicresearch.defense.gov/Programs/Vannevar-Bush-Faculty-Fellowship/).