NATIONAL SCIENCE FOUNDATION
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NSF 19-039

Dear Colleague Letter: Transitioning the NSF Critical Techniques, Technologies and Methodologies for Advancing Foundations and Applications of Big Data Sciences and Engineering (BIGDATA) Program

February 13, 2019

Dear Colleagues:

The National Science Foundation's (NSF) Critical Techniques, Technologies and Methodologies for Advancing Foundations and Applications of Big Data Sciences and Engineering (BIGDATA) program, launched in 2012, has contributed significantly to the formulation of the new field of data science. With data science now established as a discipline in its own right, NSF is transitioning investments in the BIGDATA program into (i) a new phase of larger and more targeted programs as part of the NSF-wide Harnessing the Data Revolution (HDR) Big Idea, and (ii) increased investments in core programs related to BIGDATA. While NSF plans no further competitions under the BIGDATA program, NSF anticipates supporting many new and continuing programs that fund innovative, interdisciplinary research in data science.

NSF's HDR Big Idea is a national-scale activity to enable new modes of data-driven discovery that will allow fundamental questions to be asked and answered at the frontiers of science and engineering. The NSF-wide HDR vision is realized through an interrelated set of efforts in the foundations of data science [building on the existing Transdisciplinary Research in Principles of Data Science (TRIPODS) program]; algorithms and systems for data science; data-intensive science and engineering; data cyberinfrastructure; and education and workforce development. Each of these efforts is designed to amplify the intrinsically multidisciplinary nature of the emerging field of data science.

Principal investigators (PIs) who would have applied to BIGDATA are especially encouraged to consider the Harnessing the Data Revolution: Institutes for Data-Intensive Research in Science and Engineering - Frameworks (HDR: DIRSE-FW) program. This program is one of two conceptualization paths aimed at developing institutes to accelerate discovery and

innovation in data-intensive science and engineering. The DIRSE-FW program encourages applications from teams of researchers proposing frameworks for integrated sets of science and engineering problems and data science solutions. PIs may also be interested in the other conceptualization path aimed at developing institutes, the Harnessing the Data Revolution: Institutes for Data-Intensive Research in Science and Engineering - Ideas Labs program, which aims to bring together scientists and engineers working on important data-intensive problems with data scientists and systems/cyberinfrastructure specialists.

PIs should also consider the recently issued HDR: TRIPODS Phase I program, which continues NSF's support for developing the theoretical foundations of data science through integrated research and training activities; and the HDR: Data Science Corps program, which aims to build capacity at the local, state, national, and international levels to help unleash the power of data in the service of science and society.

Activities under the HDR Big Idea complement ongoing opportunities for advancing research and education in data-intensive science and engineering. PIs are encouraged to consider applying to the following core and crosscutting programs as well:

- Core programs in the Directorate for Computer and Information Science and Engineering (CISE), and in particular those for
  - Information & Intelligent Systems (IIS); and
  - Computing and Communication Foundations (CCF);
- Core and special programs in the Directorate for Mathematical and Physical Sciences (MPS), Division of Mathematical Sciences (MPS/DMS), including:
  - Joint DMS/NLM Initiative on Generalizable Data Science Methods for Biomedical Research (DMS/NLM);
  - Computational and Data-Enabled Science and Engineering in Mathematical and Statistical Sciences (CDS&E-MSS); and
  - Algorithms for Threat Detection (ATD);
- Cyber-Physical Systems (CPS);
- Smart and Connected Health (SCH);
- Smart and Connected Communities (S&CC);
- Future of Work at the Human-Technology Frontier (FW-HTF); and
- For applications of data science, programs in the corresponding directorates/offices for the application area in science and/or engineering.

Finally, NSF anticipates additional relevant programs to be announced later in 2019 or in 2020.

We thank all the participants in the BIGDATA program over the years for their outstanding contributions that have set the foundations for the many new and enhanced programs in data science noted above. We look forward to working with the data science community through

these other programs in the years ahead.

Sincerely,

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