

Spring 2020 Joint Task Force Initiative (JTFI): AI + Science Research (RFP)

Applications Due: Tuesday, March 31, 2020 by 11:59 PM CT

Apply Online: UChicago Funding Portal - InfoReady

Budget:

- Research projects: Up to \$75K, inclusive of indirect costs
- Workshops: Up to \$15K, inclusive of indirect costs

Project Period: 12 months

Summary: *Funding for Artificial Intelligence + Science research projects among the University of Chicago, Argonne National Laboratory, Fermi National Accelerator Laboratory, and Toyota Technological Institute at Chicago*

The [AI + Science](#) research grants program will support collaborative projects between the University of Chicago, Toyota Technological Institute at Chicago (TTIC), Argonne National Laboratory (ANL), and Fermi National Accelerator Laboratory (FNAL).

The goal of this program is to 1) encourage new interactions between the University, TTIC, and the national laboratories, 2) provide unique educational experiences for students, and 3) position our institutions to successfully secure future large-scale federally-sponsored research programs.

This funding program is part of a larger joint task force, organized by the University of Chicago's [Office of Research and National Laboratories](#), and in collaboration with the [Center for Data and Computing](#) (CDAC), aimed at increasing interactions among UChicago, ANL, FNAL, and TTIC. The task force builds upon existing collaborations and aims to position our organizations for current and anticipated funding opportunities.

Funding Tracks:

I. AI + Science Research Projects

Projects may focus on broad and cross-cutting topics of relevance to the Department of Energy such as, but not limited to:

- **Experimental Design and Hypothesis Generation:** *How do you discover new things in large, complex data sets?*
- **Simulation and Experimental Data:** *How is domain science incorporated into AI algorithms?*
- **Representation Learning for Science:** *How do we match the symmetries and representation in our data to the architectures of our algorithms?*
- **Explainable AI:** *How do we understand or interpret outputs from AI algorithms?*
- **AI at Scale:** *How do we scale algorithms to tackle problems with large data and distributed systems?*
- **Hardware:** *What advanced hardware and architectures are required to support AI?*

- **Reliable AI:** *How do we develop decision-making algorithms with reliability guarantees such as robustness and safety?*

II. AI + Social Sciences Research Projects

For the Spring 2020 RFP, we are pleased to provide funding specifically in support of AI for Science projects that include the social sciences. AI and social science topics should have DOE relevance, such as, but not limited to:

- **Smart Cities:** *How do we safely and synergistically integrate intelligent technologies with natural/built environments to develop connected and smart cities?*
- **Decision Making & Threat Detection:** *How can we harness the data revolution and behavioral science to advance planning, analysis, threat detection, and decision making to support our national security.*
- **Transportation:** *What are the next generation transportation solutions that will address our nation's changing mobility challenges?*

III. Workshops

For the Spring 2020 RFP, we are pleased to consider proposals to support workshops, invited speaker talks, working groups, or other convenings focused on AI + Science research topics. Proposals should facilitate the development of new collaborations between the University and National Labs. Awards will be available for up to \$15,000 for a period of 12 months.

Applicants/Eligibility

- Principal Investigator must have PI status at UChicago, FNAL, ANL, or TTIC.
- Each application must have at least one PI from the University of Chicago and at least one PI from one of the national laboratories.
- Applicants may submit more than one application, with the same or different collaborative teams, provided that each application is scientifically distinct.
- Award recipients will be expected to participate in semi-annual meetings, among all awardees, to share progress and identify common challenges or new collaborative opportunities.
- Projects will be briefly assessed annually to determine whether teams are progressing towards their goals and collaborating across institutional boundaries; decisions on continuation of funding will be based on these assessments.

Review Criteria:

- Projects should simultaneously advance both scientific and algorithmic discovery and insights-- projects where AI researchers provide a service to the science project will not be competitive.
- Proposed projects should have DOE relevance.

- Projects should clearly articulate their team's plans for collaboration (e.g. co-location of researchers and students, regular meetings, joint student mentoring) and their plans for securing external funding.
- Projects should articulate why AI + Science seed funding is required to advance this research.

Budget:

- Individual budget proposals for research should not exceed \$75K.
- Individual budget proposals for workshops should not exceed \$15K.
- Funding will ideally be used to support student or postdoc research.
- Funding cannot be used for PI salary support.
- A detailed budget justification is required.
- A budget template will be provided.
- The University of Chicago does not charge overhead rates on internal seed awards, however, if part of the award is used to support staff or other activities at the National Labs, it may be subject to federal indirect costs. Budgets are inclusive of any indirect costs.

Evaluation & Reporting:

- The JTFI steering committee will be asked to apply the review criteria when reviewing proposals.
- The final selection will be made in April 2020.
- Upon completion of the grant period, funded PIs will be required to provide a brief written report on the project's scientific results and how the funds were used.

Application Requirements:

- Investigator (s) Information (Profile Information, Biosketch)
- Abstract (200 words max)
- Research plan (2 pages max, excluding references): Please describe why this work is novel and requires institutional collaboration, intellectual merit-- how the project advances innovation both AI and the domain field, the project's relevance to DOE research priorities, research timeline & milestones, and the specific funding opportunities you will target should the project generate expected outcomes.
- Budget and budget narrative (a budget template is available for download).
- Optional supplementary materials: Applicants may upload supplementary materials, such as references, diagrams, images.

AI Joint Task Force Members:

- James Amundson, Fermi National Accelerator Laboratory
- Ian Foster, Argonne National Laboratory, University of Chicago
- Michael Franklin, University of Chicago
- Julia Lane, University of Chicago
- Brian Nord, Fermi National Accelerator Laboratory, University of Chicago
- Rebecca Willett (Chair), University of Chicago