

Robotics@NSF

April 2021

FRR: Foundational Research | CAREER
in Robotics (PD 20-144Y) | Webinar



Outline

- FRR Webinar Team Introduction
- FRR Program Overview
- CAREER Goals and Review Criteria
- FAQs Submitted in Advance
- Open Q&A session



FRR: Foundational Research in Robotics

- Core program jointly managed by the Directorates for Engineering (ENG) and Computer and Information Science and Engineering (CISE)
- Accepts CAREER proposals annually in July
- Accepts unsolicited proposals **any time**

- All proposals are handled as part of a **single unified program**, irrespective of the division that initially receives the proposal.

FRR: What is a Robot?

For the purposes of this program, a robot is defined as **intelligence** embodied in an **engineered construct**.

- Here **intelligence** includes a broad class of methods to process information that enable a robot to solve problems or make contextually appropriate decisions.
- Here an **engineered construct** exhibits appropriate levels of physical complexity to enable the robot to sense and move within, or substantially alter, its working environment.

Projects may focus on a distinct aspect of intelligence, computation, or embodiment; research is encouraged that considers inextricably interwoven questions of intelligence, computation, and embodiment.

FRR: What is Foundational Research?

The focus of the FRR program is on **foundational advances** in robotics.

- All proposals must convincingly explain how a successful outcome will **enable transformative new** robot functionality or **substantially enhance** existing robot functionality.
- Meaningful experimental validation on a physical platform is strongly encouraged.

The proposal should clearly articulate how the intellectual contribution of the proposed work addresses **fundamental gaps in robotics**.

FRR: What is responsive?

Is there a **robot**?

- The focus of the project should be a robot or a class of robots as defined in the program description.

Will a robot gain a **new** or **significantly improved** capability?

- Over the course of project a robot or class of robots should gain new and useful abilities or significantly improve on existing abilities.

Is robotics **essential** to the *intellectual merit* of the proposal?

- Robotics should be the intellectual merit (not just broader impact) of the proposed work. Robotics should be essential to the project, and not just a convenient platform to demonstrate the research results. Choosing an application other than robotics for the project should significantly reduce its impact.

Faculty Early Career Development (CAREER) Program (NSF 20-525): Goals

- “A Foundation-wide activity that offers the National Science Foundation’s most prestigious awards in support of early-career faculty who have the potential to serve as **academic role models in research and education and to lead advances in the mission of their department or organization.**”
- “Activities pursued by early-career faculty should build a firm foundation for a **lifetime of leadership in integrating education and research.**”
- https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=503214



CAREER Proposal Review Criteria

- Evaluated using NSF's two merit review criteria:
 - What is the intellectual merit of the proposed activity?
 - What are the broader impacts of the proposed activity?
- Additional Consideration for CAREER proposals
 - Integration of Research and Education

Integration of Research and Education

- All CAREER proposals must have an integrated research and education plan at their core.
- NSF recognizes that there is no single approach to an integrated research and education plan; but encourages all applicants to think creatively about how their research will impact their education goals and, conversely, how their education activities will feed back into their research.
- These plans should reflect the proposer's own disciplinary and educational interests and goals, as well as the needs and context of his or her organization.
- Because there may be different expectations within different disciplinary fields and/or different organizations, a wide range of research and education activities may be appropriate for the CAREER program

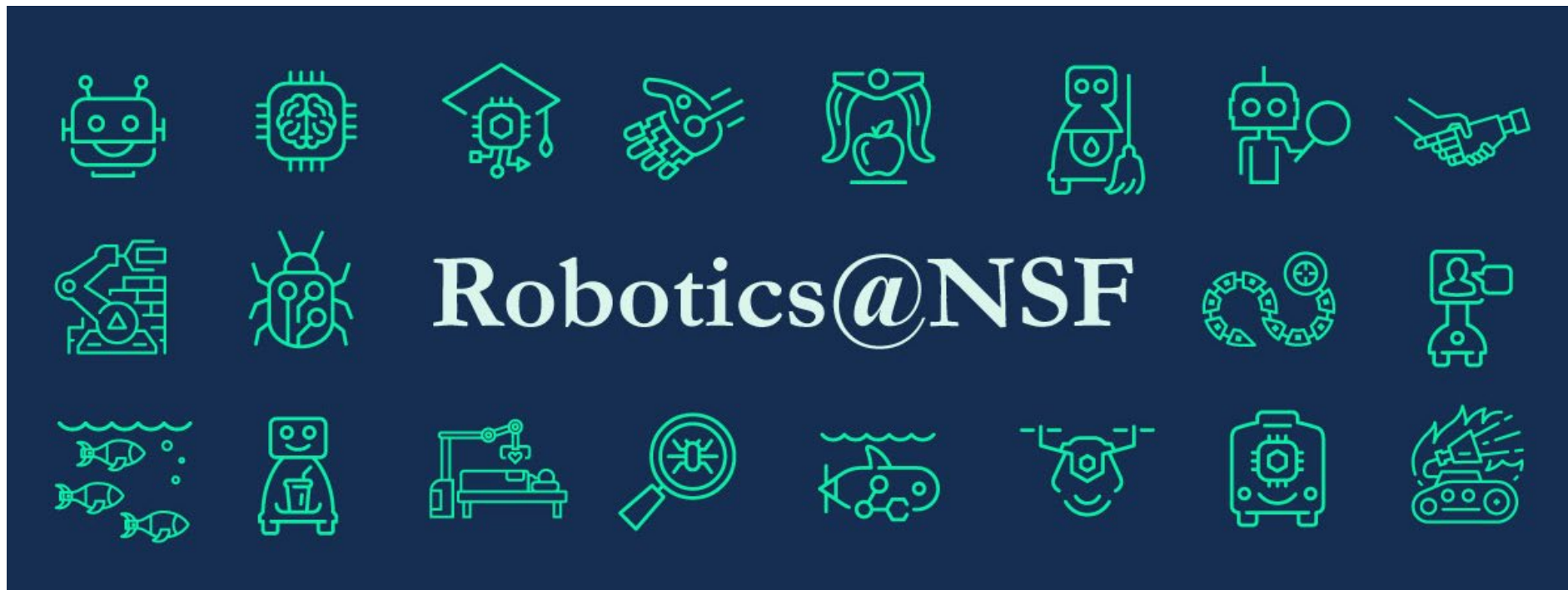
FRR CAREER Budget guidance

- All CAREER awards should be **no less than \$500k**.
- All CAREER awards **should not exceed \$600k** (except in some rare and unique circumstances to ensure success of a specific project, e.g., specialized equipment, exceptional yet costly outreach/educational activity; such exceptions **require the permission** of an FRR program officer.)
- All CAREER awards must include at least 2.5 months of PI support for the 5-year project.
- Our “**Desired Minimal Support**” is 1mo PI + 1 student + 2 trips per year

Contact Program
Officers well in
advance of the
submission deadline!

Questions?

contact robotics@nsf.gov with specific research ideas



FRR CAREER Frequently Asked Questions

- How does the FRR program relate and differ from the other NSF programs?
 - See www.nsf.gov/robotics
- What are the priority research areas for the FRR program?
 - There are not any – submit your best ideas
- How much preliminary work/data is ideal for the CAREER submission?
 - Enough to convince reviewers that it will work, but not so much that it looks like it is already done.
- How essential is it to have experimental validation on actual robots for a successful application?
 - The validation plan must convince reviewers.