National AI Research Resource (NAIRR) Pilot Overview

Katie Antypas, Office Director
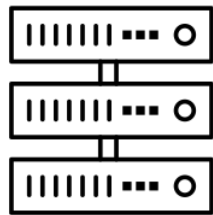
Alejandro Suarez, Program Director

NSF Office of Advanced Cyberinfrastructure (OAC)

July 18, 2024
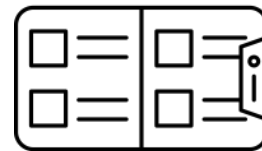
Vision for the National AI Research Resource

A widely-accessible, national research infrastructure that will advance the U.S. AI R&D environment, discovery, and innovation by empowering a diverse set of users through access to:

Secure, high-performance, privacy-preserving **computing**

High-quality **datasets**

Catalogs of **testbeds** and **educational materials**

Training tools and **user support** mechanisms

Goals:

Spur **innovation**

Increase the **diversity** of talent in AI

Improve U.S. **capacity** for AI R&D

Advance **trustworthy AI**

NSF launched a *pilot* for the NAIRR in January 2024

Strengthening and Democratizing the U.S. Artificial Intelligence Innovation Ecosystem

An Implementation Plan for a National Artificial Intelligence Research Resource

January 2023

THE WHITE HOUSE

OCTOBER 30, 2023

Executive Order on the Safe, Secure, and Trustworthy Development and Use of Artificial Intelligence

BRIEFING ROOM ▶ PRESIDENTIAL ACTIONS

By the authority vested in me as President by the Constitution and the laws of the United States of America, it is hereby ordered as follows:

Section 1. Purpose. Artificial intelligence (AI) holds extraordinary potential for both promise and peril. Responsible AI use has the potential to help solve urgent challenges while making our world more prosperous, productive, innovative, and secure. At the same time, irresponsible use could exacerbate societal harms such as fraud, discrimination, bias, and disinformation; displace and disempower workers; stifle competition; and pose risks to national security. Harnessing AI for good and realizing its myriad benefits requires mitigating its substantial risks. This endeavor demands a society-wide effort that includes government, the private sector, academia, and civil society.
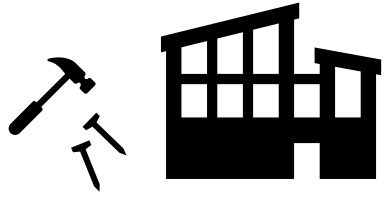
NAIRR Pilot Goals

1. Demonstrate the value & impact of the NAIRR concept.

2. Support novel & transformative AI research while reaching broad communities.

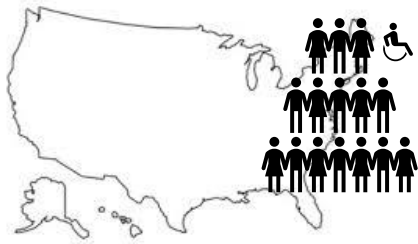3. Gain experience to advance and refine NAIRR design.

*** NOTE: funding only an estimate from the Task Force.
No funding has yet been appropriated for NAIRR.**

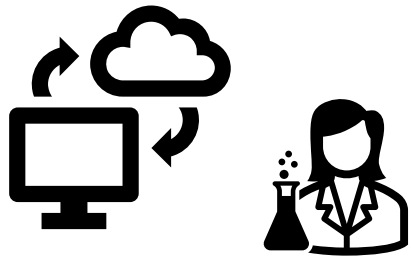# Current opportunities for the community

Contribute to the NAIRR Pilot with a demonstration project

Funding opportunity: Demonstration Project DCL – concept outline required

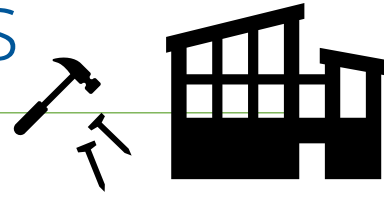**Train, educate and/or build community** around NAIRR pilot resources

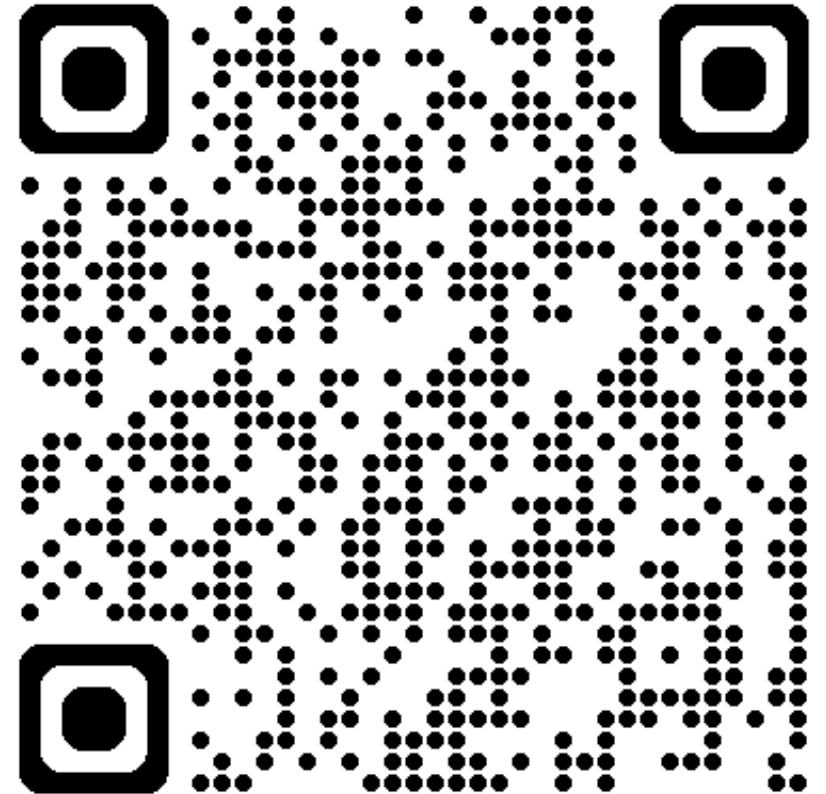*Funding opportunity: NAIRR Pilot Expansion DCL – concept outline required*

Apply to use NAIRR Pilot resources

Access to computing, data, model, collaboration resources – nairrpilot.org

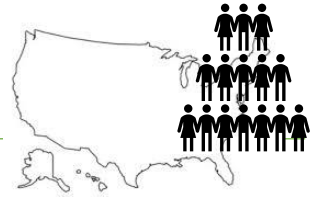# NSF 24-093: NAIRR Pilot Demonstration Projects

- Separate from allocation requests!

- Announces NSF's interest in funding NAIRR Demonstration Projects
  - EAGER proposals
  - Supplemental funding requests

- NAIRR Pilot Demonstration Projects
  - Led by teams of AI researchers, domain scientists, and cyberinfrastructure specialists
  - **Innovatively use, integrate with, or rely on one or more NAIRR Pilot requestable resources.**

- **Interested teams should submit a Concept Outline to NAIRR_Pilot@nsf.gov**

https://www.nsf.gov/pubs/2024/nsf24093/nsf24093.jsp
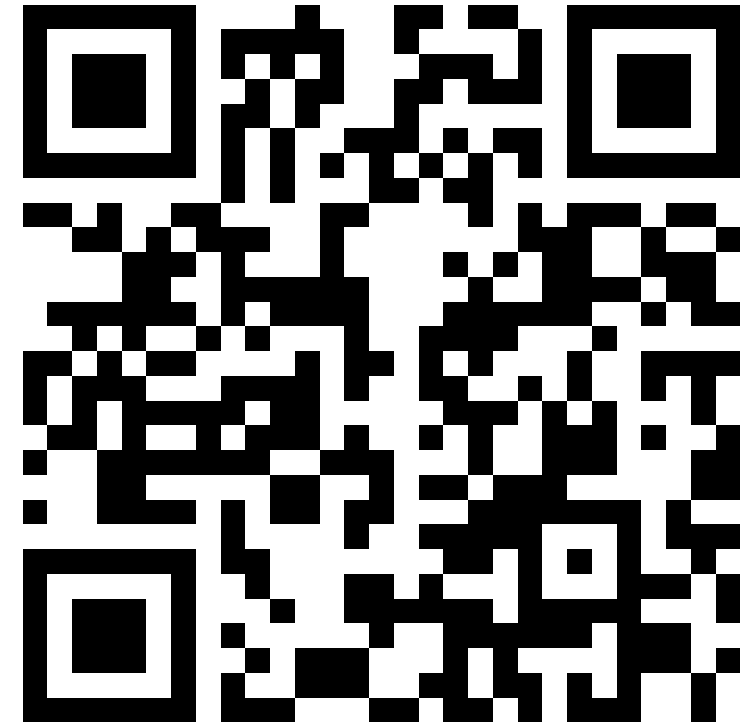
NSF 24-109 NAIRR Pilot Expansion

- NSF released a 'Dear Colleagues Letter' calling for proposals that expand the NAIRR pilot community
- Two focus areas:
  - New and emerging researchers
    - Supplements
    - EAGER proposals
    - Conference and workshop proposals
  - Educators
    - Conference and workshop proposals
    - Research (or education) Coordination Networks

- Interested teams should submit a Concept Outline to NAIRR_Pilot@nsf.gov

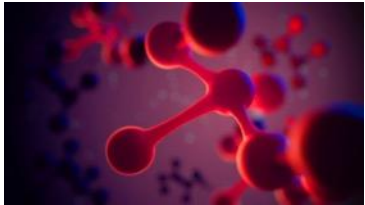https://www.nsf.gov/pubs/2024/nsf24109/nsf24109.jsp

Eligibility to use NAIRR Pilot Resources

AI Researchers

Domain Scientists Applying AI

Students and Educators

Researchers and educators affiliated with US-Based Institutions including:

- Academic institutions

- Non-profits

- Federal agencies or federally-funded R&D centers

- State, local, or tribal agencies

- Startups and small businesses with Federal grants

Cross-Cutting AI Research Thrusts

- **Advance AI methods** that enable scientific discovery
- Develop practices for creating **open-source foundation models** for specific applications
- Use large-scale models to **explore complex datasets in**teractively
- Advance approaches for **integrating simulations and AI**
- Empower use of scientific data **by other stakeholders and the public**.
- Probe key challenges using **sensitive data** including privacy-preserving methods
- Use **AI at the edge** for scientific research

Initial NAIRR Pilot AI Research Thrusts

- Accelerate societally-relevant research on **AI safety, reliability, security, and privacy**.

- Empower advances in **cancer treatment and individual health outcomes.**

- Support resilience and optimization of **agricultural, water, and grid infrastructure.**

- Improve design, control, and quality of **advanced manufacturing systems.**

- Address **earth, environmental, and climate challenges** via integration of diverse data and models.

Apply for resources at nairrpilot.org Today!

NAIRR Pilot — National Artificial Intelligence Research Resource Pilot

NAIRR Pilot
Portal

CLASSROOM AND EDUCATOR RESOURCES

Request access to educational platforms (such as Juypter notebooks).

Apply

RESEARCHER RESOURCES

Request access to advanced computing, cloud computing, models, software, platforms, and collaborations.

Apply

DATA, MODELS, AND MORE

Additional government and government-funded resources that do not require an application.

View
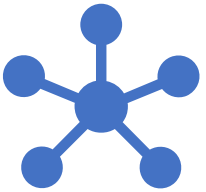
Opportunity for researchers and educators

Research Resources

Computing

Datasets

Models, software, platforms

User support and training

Educator Resources

Interactive notebooks: integrated hardware and software environments

NAIRR Pilot Agency Funded Resources

Variety of Architectures & services available

Delta – U. Of Illinois

Frontera – U. of Texas, Austin

Anvil – Purdue University

Jetstream 2 – Indiana University
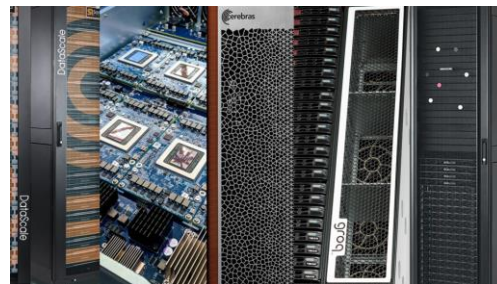
Bridges 2 – U. Pittsburgh/CMU Neocortex

Expanse
Voyager – UC San Diego

ACES - Texas A&M University
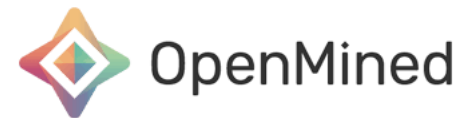
AI Testbed – Argonne National Lab

NAIRR Pilot

Non-government Resources Available

NAIRR Pilot Partner showcase was held on 5/21
Many non-government contributions were described
Available at https://new.nsf.gov/events/nairr-pilot-partner-showcase/2024-05-21

Resources for Educators

Educator Resources

Interactive notebooks: integrated hardware and software environments

Prototype National Research Platform

 CloudLab

NAIRR Pilot Classroom Partner showcase was held on 6/13
https://new.nsf.gov/events/nairr-pilot-classroom-partner-showcase/2024-06-13

Application Process

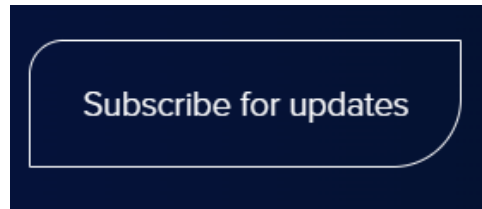*FAQ available at*
https://nairrpilot.org/help/faq

- Project Description (3-pages)
    A. Scientific/Technical Goal
    B. Estimate of Compute, Storage, and other Resources **(Justify this!)**
    C. Support Needs
    D. Team and Team preparedness
- Supporting Documents
    - References
    - CV / Bio sketch material for team lead

Some points to keep in mind...

- Not an NSF Proposal!
  - Not a request for funding

- Resource availability is first come first serve
  - No guarantee of future availability during pilot

- Review process:
  - Expectation: Requests reviewed within ~6 weeks of submission
  - Requests are batched to 15th day of each month (i.e. requests submitted by May 15th are currently being reviewed).

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Stay In Touch!

- Sign up for our mailing list!
  - Go to nairrpilot.org & click "Subscribe for updates"

- You may use the Q&A feature of Zoom to submit questions