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Opportunity Title: Machine Learning in Survey Cosmology
Opportunity Reference Code: 0238-NPP-MAR26-JPL-Astrophys

Organization National Aeronautics and Space Administration (NASA)

Reference Code 0238-NPP-MAR26-JPL-Astrophys

How to Apply All applications must be submitted in Zintellect

Please visit the NASA Postdoctoral Program website for application instructions and requirements: How to Apply | NASA Postdoctoral Program (orau.org)

A complete application to the NASA Postdoctoral Program includes:

1. Research proposal
2. Three letters of recommendation
3. Official doctoral transcript documents

Application Deadline 4/2/2026 6:00:59 PM Eastern Time Zone

Description **About the NASA Postdoctoral Program**

The NASA Postdoctoral Program (NPP) offers unique research opportunities to highly-talented scientists to engage in ongoing NASA research projects at a NASA Center, NASA Headquarters, or at a NASA-affiliated research institute. These one- to three-year fellowships are competitive and are designed to advance NASA's missions in space science, Earth science, aeronautics, space operations, exploration systems, and astrobiology.

Description:

Current and future cosmology missions in the big data era of astronomy can greatly benefit from advances in deep learning. Architectures based on convolutional neural networks (e.g., GANs, deep image prior, diffusion probabilistic models) are well tested for applications such as image generation, data/image to image translation, feature/domain transfer, or super resolution. These applications could notably enhance astronomical measurements from combined data sets. For instance, images boosted in depth and/or resolution can be used to increase the number of usable sources for weak lensing, reduce the systematics errors due to blending, photometric redshifts, and shape measurements, and potentially put tighter constraints on the cosmological parameters measurable through weak lensing. Data from the current ground- and space-based surveys (with e.g., HSC, KiDS+Viking, DES, HST) will be used to quantify the gain for the upcoming missions (i.e., Rubin, Euclid, Roman, and SPherex) with heavy JPL, Caltech and IPAC contributions. We are seeking a postdoctoral fellow to lead this effort. Experience with deep learning frameworks is highly desirable, and familiarity with multi-band spectro/photometric galaxy data of existing and future cosmology missions as well as a broad knowledge of weak lensing systematics is preferred. The successful candidate will be working closely with Dr. Eric Huff and Dr. Shoubaneh Hemmati and other members of the cosmology team at JPL.

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Field of Science: Astrophysics

Advisors:
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Applications with citizens from Designated Countries will not be accepted at this time, unless they are Legal Permanent Residents of the United States. A complete list of Designated Countries can be found at: https://www.nasa.gov/oiir/export-control.

Eligibility is currently open to:

- U.S. Citizens;
- U.S. Lawful Permanent Residents (LPR);
- Foreign Nationals eligible for an Exchange Visitor J-1 visa status; and,
- Applicants for LPR, asylees, or refugees in the U.S. at the time of application with 1) a valid EAD card and 2) I-485 or I-589 forms in pending status

Questions about this opportunity? Please email npp@orau.org

Point of Contact Mikeala

Eligibility Requirements

- **Degree:** Doctoral Degree.