

Opportunity Title: Postdoctoral Research Opportunity in Applied Machine Learning

Opportunity Reference Code: USDA-ARS-2020-0003



Organization U.S. Department of Agriculture (USDA)

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How to Apply A complete application consists of:

- An application
- Transcript(s) – For this opportunity, an unofficial transcript or copy of the student academic records printed by the applicant or by academic advisors from internal institution systems may be submitted. All transcripts must be in English or include an official English translation. Click [here](#) for detailed information about acceptable transcripts.
- A current resume/CV, including academic history, employment history, relevant experiences, and publication list
- Two educational or professional recommendations

All documents must be in English or include an official English translation.

If you have questions, send an email to USDA-ARS@orau.org. Please include the reference code for this opportunity in your email.

Description ***Applications will be reviewed on a rolling-basis.**

Multiple postdoctoral research opportunities are currently available with the U.S. Department of Agriculture (USDA), Agricultural Research Service (ARS), Genomics and Bioinformatics Research Unit located in Gainesville, Florida.

This research opportunity is part of the SCINet Fellowship program at ARS. All postdocs will spend time at headquarters for some of their training, but will be based at ARS regional laboratories for more specific training. One of the goals of this research opportunity is to encourage cross-disciplinary, cross-location research; this will be done by placing postdocs in different regional labs based on their skillset and interests in regional locations. The strength of this fellowship program is the collection of postdocs and ARS' collection of regional labs.

The SCINet/Big Data Program at ARS offers research opportunities to motivated postdoctoral participants interested in solving agricultural- and natural resource-related problems at a range of spatial and temporal scales, from the genome to the continent, and sub-daily to evolutionary time scales. One of the goals of the SCINet Initiative is to develop and apply new technologies, including artificial intelligence (AI) and machine learning, to help solve complex agricultural problems that also depend on collaboration across scientific disciplines and geographic locations. In addition, many of these technologies rely on the synthesis, integration, and analysis of large, diverse datasets that benefit from high performance computers (HPC). The objective of these opportunities is to facilitate cross-disciplinary, cross-location research through collaborative research on problems of interest to each participant and amenable to or required by the HPC environment. Training will be provided in specific AI, machine learning, deep learning, and statistical software needed for the HPC.

This is a unique research opportunity providing training in applied machine learning and scientific leadership in high performance computing. Under the guidance of a mentor, the selected participant will develop and co-lead several two-day ARS-wide training workshops on scientific computing, and will help organize communities of scientific practice in machine learning for metagenomics across the ARS. The topics will vary, but past examples have included machine learning, microbiome science, and collaborating with Data Carpentry on their curriculum (<https://datacarpentry.org/>). The participant will have the opportunity to develop skills in python package development, software development practices, and machine learning applications, including developing classifiers to predict pathogen phenotypes from metagenomics data, developing new methods for polygenic scoring, linking host genotypes to microbiomes, and modeling microbial communities with probabilistic graphical models. The participant will also have the opportunity to collaborate with multiple USDA ARS scientists on additional data analysis projects, and to write collaborative scientific papers dealing with metagenomics.

For more information on the Genomics and Bioinformatics Research Unit, please visit: <https://tinyecology.com/> OR <https://www.ars.usda.gov/southeast-area/stoneville-ms/genomics-and-bioinformatics-research/>

Anticipated Appointment Start Date: After October 15, 2019

This program, administered by ORAU through its contract with the U.S. Department of Energy (DOE) to manage the Oak Ridge Institute for Science and Education (ORISE), was established through an interagency agreement between DOE and ARS. The initial appointment is for one year, but may be renewed upon recommendation of ARS and is contingent on the availability of funds. The participant will receive a monthly

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stipend commensurate with educational level and experience. Proof of health insurance is required for participation in this program. The appointment is full-time at ARS in the Gainesville, Florida, area. Participants do not become employees of USDA, ARS, DOE or the program administrator, and there are no employment-related benefits.

This opportunity is available to U.S. citizens, Lawful Permanent Residents (LPR), and foreign nationals. Non-U.S. citizen applicants should refer to the [Guidelines for Non-U.S. Citizens Details page](#) of the program website for information about the valid immigration statuses that are acceptable for program participation.

For more information about the ARS Research Participation Program, please visit the [Program Website](#).






Qualifications

The qualified candidate must have received a doctoral degree in one of the relevant fields before the start date of their appointment.

Preferred skills:

- Experience with high performance computing
- Experience in microbiology, computational biology, statistics, or computer science
- Strong communication and organizational skills
- Experience or interest in teaching

Eligibility Requirements

- **Degree:** Doctoral Degree.
- **Discipline(s):**
 - **Computer, Information, and Data Sciences** (4 )
 - **Earth and Geosciences** (1 )
 - **Environmental and Marine Sciences** (5 )
 - **Life Health and Medical Sciences** (10 )
 - **Mathematics and Statistics** (1 )
- **Veteran Status:** Veterans Preference, degree received within the last 120 month(s).