Opportunity Title: USFS Computer Science Fellowship for Wildfire Modeling and Risk Analysis

Opportunity Reference Code: USDA-USFS-RMRS-2024-0149

Organization	U.S. Department of Agriculture (USDA)
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How to Apply	***Connect with ORISE...on the GO!*** Download the new ORISE GO mobile app in the Apple App Store or Google Play Store to help you stay engaged, connected, and informed during your ORISE experience and beyond!

A complete application package 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. Selected candidate must provide proof of completion of the degree before the appointment can start. Click **Here** for detailed information about acceptable transcripts.
- A current resume/CV
- Two educational or professional recommendations. At least one recommendation must be submitted in order for the mentor to view your application.

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

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

USFS Office/Lab and Location: A computer science fellowship opportunity is available with the US Department of Agriculture (USDA) Forest Service (USFS) within the Rocky Mountain Research Station (RMRS) located in Missoula, Montana. This specific opportunity is with the Fire Modeling Institute (FMI) at the Missoula Fire Sciences Laboratory.

At the heart of the U.S. Forest Service's mission is their purpose. Everything they do is intended to help sustain forests and grasslands for present and future generations. Why? Because their stewardship work supports nature in sustaining life. This is the purpose that drives the agency's mission and motivates their work across the agency. It's been there from the agency's very beginning, and it still drives them. To advance the mission and serve their purpose, the U.S. Forest Service balances the short and long-term needs of people and nature by: working in collaboration with communities and our partners; providing access to resources and experiences that promote economic, ecological, and social vitality; connecting people to the land and one another; and delivering world-class science, technology and land management.

FMI is a center of expertise that supports fire and fuels management planning, resource management, and science implementation locally, regionally, nationally, and internationally. More information is available at: https://www.firelab.org/ and https://www.firelab.org/collaborative-programs/fmi.

Research Project: FMI is currently engaged in a national-scale project focused on evaluating the effectiveness of landscape fuel treatments at reducing wildfire risk to homes and critical infrastructure in the United States. One important component of this project involves building upon existing software tools for calculating quantitative wildfire risk metrics. The

fellowship will include modifying and adapting existing wildfire simulation modeling software to add functionality and increase efficiency. It will also include automating calculations of pre-treatment and post-treatment wildfire risk and related metrics. It may also include figuring out how to implement these simulation models and risk calculations in different computing environments, with an eye toward leveraging cloud-based computing resources.

Learning Objectives: This participant will have the opportunity to apply computer science knowledge and technical skills in software engineering and hardware administration to address a very important part of the Forest Service's Wildfire Crisis Strategy. They will have the opportunity to learn about the application of technical IT skills in the areas of wildfire science, wildfire behavior modeling, risk calculations, and processing and visualization of geospatial data. FMI ORISE participants will gain insight into what its like to be a part of a premier natural science research organization. Specific learning objectives include:

- Learn about hardware and network infrastructure on Forest Service Research and Development's Discovery Network at the Missoula Fire Sciences Lab.
- Learn about, and help to evaluate the pros and cons of, different cloud computing environments available to Forest Service employees for fire modeling.
- Learn about the codebase for different fire modeling applications developed at the Missoula Fire Sciences Lab like FSim, FlamMap, and others.
- Learn about web-based wildfire decision support and modeling tools such as the Wildland Fire Decision Support System, the Interagency Fuels Treatment Decision Support System, and the related Fire Modeling Services Framework.
- Learn about the fundamentals of fire science behind different fire modeling systems.

Mentor: The mentor for this opportunity is Gregory Dillon (greg.dillon@usda.gov). If you have questions about the nature of the research, please contact the mentor.

Anticipated Appointment Start Date: June 3, 2024. Start date is flexible and will depend on a variety of factors.

Appointment Length: The appointment will initially be for two years but may be extended upon recommendation of USFS and is contingent on the availability of funds.

Level of Participation: The appointment is full time.

Participant Stipend: The participant will receive a monthly stipend up to $7,200 commensurate with educational level and experience. Additionally, a relocation allowance of up to $2,500 will be provided.

Citizenship Requirements: 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.

ORISE Information: 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 USFS. Participants do not become employees of USDA, USFS, DOE or the program administrator, and there are no employment-related benefits. Proof of health insurance is required for participation in this program. Health insurance can be obtained through ORISE.

Questions: Please visit our Program Website. After reading, if you have additional questions about the application process please email ORISE.USFS.RMRS@orau.org and include the reference code for this opportunity.

Qualifications The qualified candidate should have received or be currently pursuing a bachelor's or master's degree in the one of the relevant fields. Degree must have been received within the past 6 months or be anticipated to be received by 5/31/2024.

Preferred skills:

- A background in computer science with experience in both software engineering and hardware administration.
- Ability to write code in programming languages such as Python, Java, and C/C++.
- Ability to administer IT hardware including high performance computing clusters, networking infrastructure, and related peripherals.
- Experience with both Windows and Linux operating systems.
- Experience in, and optimizing software for, cloud computing environments.
- Experience with geospatial data and natural sciences datasets (including vegetation, weather, climate, etc.) is preferred, as is a curiosity to learn about wildfire science and management.

Eligibility Requirements
- **Degree:** Bachelor's Degree or Master's Degree received within the last 6 months or anticipated to be received by 5/31/2024 12:00:00 AM.
- **Academic Level(s):** Post-Bachelor's or Undergraduate Students.
- **Discipline(s):**
  - **Computer, Information, and Data Sciences** (9 👁)