Opportunity Title: FDA Fellowship on Data Fusion in Medical Artificial Intelligence / Machine Learning

Opportunity Reference Code: FDA-CDRH-2022-18

Organization	U.S. Food and Drug Administration (FDA)
Reference Code	FDA-CDRH-2022-18
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 consists of:

- An application
- Transcripts – Click here for detailed information about acceptable transcripts
- A current resume/CV, including academic history, employment history, relevant experiences, and publication list
- One educational or professional recommendation

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

If you have questions, send an email to ORISE.FDA.CDRH@orau.org. Please include the reference code for this opportunity in your email.

Application Deadline	12/26/2022 3:00:00 PM Eastern Time Zone
Description	****Applications will be reviewed on a rolling-basis.***

A research opportunity is available in the Division of Imaging, Diagnostics, and Software Reliability (DIDSR) within the Center for Devices and Radiological Health (CDRH), Food and Drug Administration (FDA) located in Silver Spring, Maryland.

Oak Ridge Institute for Science and Education (ORISE) Research Participation Programs at the U.S. Food and Drug Administration are educational training programs designed to provide students and recent graduates, opportunities to participate in project-specific research and developmental at the Center for Devices and Radiological Health (CDRH). The mission of CDRH is to protect and promote public health. CDRH assures that patients and providers have timely and continued access to safe, effective, and high-quality medical devices and safe radiation-emitting products. CDRH provides consumers, patients, caregivers, and providers with understandable and accessible science-based information about products. CDRH facilitates medical device innovation by advancing regulatory science, providing industry with predictable, consistent, transparent, and efficient regulatory pathways, and assuring consumer confidence in devices marketed in the U.S.

Division of Imaging, Diagnostics, and Software Reliability (DIDSR) develops methods for evaluating emerging medical imaging systems. Our research programs directly impact FDA's regulatory assessments in areas including * AI/ML * WSI and digital pathology * Extended-reality (AR/VR) devices * Clinical trial design * In silico trials * Imaging physics. More information: https://www.fda.gov/about-fda/cdrh-offices/office-science-and-engineering-laboratories.

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The selected candidate will join a multi-disciplinary multi-center team of AI experts, engineers, physicists, geneticists, oncologists and other clinicians and train in a highly collaborative environment by conducting cutting edge research on AI/ML algorithms. Under the guidance of a mentor, training activities could include:

- Joint analysis of datasets that include serial radiological images and genomics information for the prediction of response to therapy for personalized medicine approaches.
- Development AI/ML pipelines to enable timely decisions about whether to continue a current treatment or seek an alternative, including
  - Data harmonization
  - Feature extraction from imaging, genomics and clinical data
  - Feature selection and feature space reduction
  - Modality fusion
  - Performance evaluation
- Design of clean reproducible code that runs on our multi-GPU clusters
- Contribution to submissions to major conferences / journals and progress reports

Anticipated Appointment Start Date: January 2, 2023; start date is flexible

This program, administered by ORAU through its contract with the U.S. Department of Energy to manage the Oak Ridge Institute for Science and Education, was established through an interagency agreement between DOE and FDA. The initial appointment is for one year but may be renewed upon recommendation of FDA contingent on the availability of funds. The participant will receive a monthly stipend commensurate with educational level and experience. Proof of health insurance is required for participation in this program. The appointment is full-time on-site for laboratory research at FDA in the Silver Spring, Maryland, area. Participants do not become employees of FDA, DOE or the program administrator, and there are no employment-related benefits.

Completion of a successful background investigation by the Office of Personnel Management (OPM) is required for an applicant to be on-boarded at FDA. OPM can complete a background investigation only for individuals, including non-US Citizens, who have resided in the US for a total of three of the past five years.

FDA requires ORISE participants to read and sign their FDA Education and Training Agreement within 30 days of his/her start date, setting forth the conditions and expectations for his/her educational appointment at the agency. This agreement covers such topics as the following:

- Non-employee nature of the ORISE appointment
- Prohibition on ORISE Fellows performing inherently governmental functions
- Obligation of ORISE Fellows to convey all necessary rights to the FDA regarding intellectual property conceived or first reduced to practice during their fellowship
- The fact that research materials and laboratory notebooks are the property of the FDA
- ORISE fellow's obligation to protect and not to further disclose or use non-public information.

Qualifications The qualified candidate should have received a doctoral degree in one of the relevant fields (e.g. Engineering, Physics, Mathematics, Computer Science, Statistics), or be currently pursuing the degree with completion by

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December 31, 2022. Degree must have been received within the past five
years.

Preferred skills include:

- Previous experience, coursework, and solid foundation in one or more
  areas of machine learning, deep learning including CNNs, RNNs,
  LSTMs, or computer vision.
- Excellent coding skills in Python and prior experience with machine
  learning code libraries
- Good oral and writing communication skills
- Previous experience with applying AI/ML, image and/or genomics
  analysis methods to medical data.
- Proven track record of research and peer-reviewed publications in
  engineering, computer science, or another relevant field of study

Must meet security requirements including a minimum of 3 out of the past 5
years with residency status in the US.

Eligibility Requirements

- **Degree:** Doctoral Degree received within the last 60 months or
  anticipated to be received by 12/31/2022 11:59:00 PM.
- **Discipline(s):**
  - **Computer, Information, and Data Sciences** (2 👁)
  - **Engineering** (27 👁)
  - **Physics** (16 👁)

Affirmation   I have lived in the United States for at least 36 out of the past 60
months. (36 months do not have to be consecutive.)