

**Opportunity Title:** FDA Fellowships in Machine Learning for Medical Image Reconstruction and Denoising

**Opportunity Reference Code:** FDA-CDRH-2022-02

**Organization** U.S. Food and Drug Administration (FDA)

**Reference Code** FDA-CDRH-2022-02

**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
- A cover letter (upload in the Writing Sample area)
- Three educational or professional recommendations

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

If you have questions, send an email to [ORISE\\_FDA\\_CDRH@oraui.org](mailto:ORISE_FDA_CDRH@oraui.org). Please include the reference code for this opportunity in your email.

**Description** \*Applications will be reviewed on a rolling-basis, and this posting will remain open until filled.

A research opportunity is currently available with the Office of Science and Engineering Laboratories (OSEL) at the Center for Devices and Radiological Health (CDRH) at the U.S. Food and Drug Administration located in Silver Spring, Maryland.

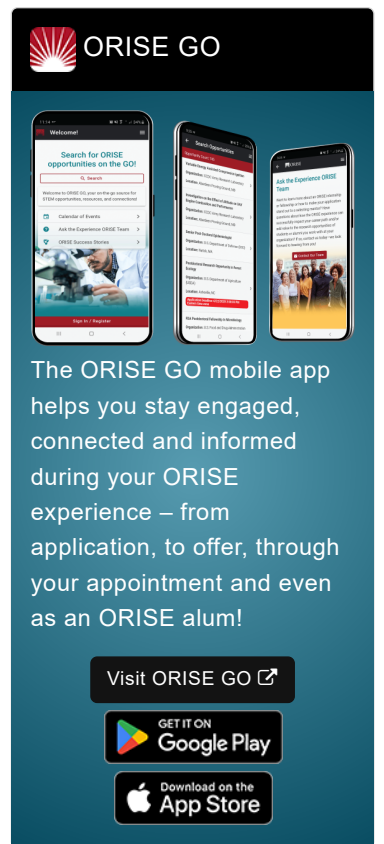
#### HELP ADVANCE PUBLIC HEALTH BY ACCELERATING ACCESS TO INNOVATIVE IMAGING

The FDA, an agency within the U.S. Department of Health and Human Services, promotes public health by assuring the safety and effectiveness of drugs, vaccines and medical devices. The Office of Science and Engineering Laboratories (CDRH/OSEL) accelerates patient access to innovative, safe and effective devices through best-in-the-world regulatory science.

#### JOIN A TEAM LEADING INNOVATION IN IMAGE SCIENCE FOR REGULATORY EVALUATION


The 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>.


The selected research fellow will collaborate closely with a multidisciplinary research group (engineers, physicists, mathematicians and clinicians) on developing generalizable, deep-learning tomographic reconstruction and denoising techniques for pediatric patients. The research will also involve




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sophisticate computational modeling of pediatric patients to generating pediatric data for training and testing deep learning methods, as well as task-based performance assessment methodology to objectively evaluate the image quality of deep learning reconstructed or denoised images.

Under the guidance of a mentor, the participant will be involved in the following activities:

- Conduct research to answer emerging evaluation challenges in medical imaging and diagnostics systems
- Contribute to the Agency's regulatory efforts by providing technical expertise
- Work collaboratively with team members and stakeholders to complete and report widely
- Disseminate findings and regulatory science tools in conferences and peer-reviewed paper publications

**Anticipated Appointment Start Date: As soon as a qualified candidate is identified; 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 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 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 master's or doctoral degree in one of the relevant fields. Degree must have been received within the past five years.

Preferred skills:

- medical image reconstruction and denoising in CT, PET/SPECT, or MRI
- developing and analyzing machine learning and deep learning methods
- computational modeling of patient anatomies and simulation of x-ray

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imaging systems

- statistical and objective image quality assessment
- programming with languages such as Python or C, and deep learning frameworks (TensorFlow, PyTorch, etc.)
- speaking, writing, and communication in English

**Eligibility Requirements**

- **Degree:** Master's Degree or Doctoral Degree received within the last 60 month(s).
- **Discipline(s):**
  - **Computer, Information, and Data Sciences** ([17](#))
  - **Engineering** ([27](#))
  - **Life Health and Medical Sciences** ([4](#))
  - **Mathematics and Statistics** ([11](#))
  - **Physics** ([16](#))
  - **Science & Engineering-related** ([1](#))

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