

Opportunity Title: USDA-ARS Postdoctoral Fellowship in Hyperspectral Imaging and Machine Vision
Opportunity Reference Code: USDA-ARS-2020-0199


Organization	U.S. Department of Agriculture (USDA)
Reference Code	USDA-ARS-2020-0199
How to Apply	<p>A complete application consists of:</p> <ul style="list-style-type: none"> • 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 • Two educational or professional recommendations <p>All documents must be in English or include an official English translation.</p> <p>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!</p>
Application Deadline	2/15/2021 3:00:00 PM Eastern Time Zone
Description	<p>*Applications are reviewed on a rolling-basis and this posting could close before the deadline.</p>

ARS Office/Lab and Location: A postdoctoral research opportunity is currently available with the U.S. Department of Agriculture (USDA), Agricultural Research Service (ARS), Quality & Safety Assessment Research Unit (QSARU) at the National Poultry Research Center located in Athens, Georgia.

Research Project: The USDA-ARS Quality and Safety Assessment Research Unit's Imaging Research Laboratory is conducting research on hyperspectral imaging, computer vision, big image data, machine learning and artificial intelligence for solving food sorting problems. A multi-disciplinary team of engineers, scientists, and support personnel has developed state-of-the-art hyperspectral imaging and computer vision technology and system for rapid and non-contact detection of quality and safety traits in poultry meat and eggs. The team's research and development address optical image-based sensing challenges in the poultry and egg industries including meat quality traits (e.g. pH, meat color, drip loss, tenderness), muscle myopathies (e.g. woody breast syndrome, white striping, spaghetti meat), foreign materials, foodborne microbial pathogens, egg quality, and microcracks in eggs.

Under the guidance of a mentor, the selected participant will conduct applied research in the area of hyperspectral imaging, 3D imaging, computer vision, and deep learning. The overall objective for this research is to develop sensor fusion methods and tools for detection and analysis of poultry meat myopathies and quality traits using a wide range of modalities and machine learning techniques, including hyperspectral imagery, optical coherence tomography, and deep learning. Emphasis will be placed on rapid prototyping, automation, sensor and data fusion algorithms, image processing algorithms, deep learning frameworks, and user-interface software to control, process and visualize results. The participant will conduct independent research to develop and improve software, algorithms, system prototypes, and data analysis. The participant will also be involved in communicating research results through reports, presentations, journal articles, or demonstrations of technology.





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Learning Objectives: Throughout the course of this research project, the participant will learn to develop skills in performing independent research and to enhance knowledge and skills in imaging and deep learning for assessing quality and anomaly in poultry meat.

Mentor(s): The mentor for this opportunity is Seung-Chul Yoon (seungchul.yoon@usda.gov). If you have questions about the nature of the research please contact the mentor(s).

Anticipated Appointment Start Date: Winter 2021. Start date is flexible and will depend on a variety of factors.

Appointment Length: The appointment will initially be for one year, but may be renewed upon recommendation of ARS and is contingent on the availability of funds.

Level of Participation: The appointment is full-time.

Participant Stipend: The participant(s) will receive a monthly stipend commensurate with educational level and experience.

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 ARS. Participants do not become employees of USDA, ARS, 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 USDA-ARS@orau.org and include the reference code for this opportunity.

Qualifications

The qualified candidate should have received a doctoral degree in one of the relevant fields, or be currently pursuing the degree with completion by January 2021.

Preferred skills:

- Experience with one or more of the following: hyperspectral/multispectral imaging, optical coherence tomography, machine vision, deep learning, sensor fusion, data fusion, 3D imaging, data science and engineering, image classification, software development, and/or spectroscopy
- Research experience in sensor and/or data fusion
- Research experience as evidenced by published work and/or presentations
- Understanding of control of electronic devices and sensors via computer programming
- Fluency in one or more of the following programming languages: C, C++, C#,






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MATLAB, Python, and R

**Eligibility
Requirements**

- **Degree:** Doctoral Degree.
- **Discipline(s):**
 - **Computer, Information, and Data Sciences** (6 )
 - **Engineering** (11 )
 - **Life Health and Medical Sciences** (3 )
 - **Mathematics and Statistics** (1 )
 - **Physics** (2 )