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Opportunity Title: Computer Vision Software Development Support
Opportunity Reference Code: EPA-SSP-0030-4

Organization U.S. Environmental Protection Agency (EPA)

Reference Code EPA-SSP-0030-4

How to Apply **Ready to send share your interest with EPA scientists?**

- Submit application and supporting documents by clicking on Apply Now button.
- *For more information, contact* EPAjobs@orau.org. Do not contact EPA directly.
- *Check out our website at:* *orau.org/epa/*

Description The EPA Environmental Research and Business Support Program has an immediate opening for a full-time Computer Vision Software Development Support position with the EPA facility in Research Triangle Park, NC.

What the EPA project is about

The Office of Research and Development (ORD) at the EPA supports high-quality research to improve the scientific basis for decisions on national environmental issues and help EPA achieve its environmental goals. Research is conducted in a broad range of environmental areas by scientists in EPA laboratories and at universities across the country.

The Homeland Security Research Program (HSRP) is responsible for addressing the research needs associated with EPA fulling its Homeland Security related responsibilities. These responsibilities include preparing for and have capabilities to support response to environmental contamination that threatens public health resulting from a disaster. HSRP staff work closely with their EPA partners and other federal, state, and local stakeholders to understand response/remediation needs and to (in part) develop capabilities for supporting emergency response and recovery capabilities through innovative technologies, such as automation, computer vision, and artificial intelligence. HSRP is currently exploring two separate efforts that make use of these technologies: (1) computer vision/sensing for tracking resources by means of a QR code scanning or radio-frequency identification (RFID); and (2) the use of artificial intelligence for identifying infrastructure through publicly available imagery (e.g., imagery derived from cell phones, cameras, and Google Street View).

What you will be doing

As a team member, you will provide development support to the continued enhancement and further development of the HSRP's resource tracking application and the use of artificial intelligence for improving decision making. You will also support the development and expansion of these efforts to support the needs of EPA emergency response programs.

- Computer vision/sensing for tracking resources: The HSRP has developed a tool for tracking assets (e.g., people, equipment) through the use of QR codes. The system uses USB-interface webcams along with the open-source python-based software for scanning and generating QR codes. The system was designed to read QR codes

attached to assets. QR stations (consisting of a laptop and webcam) can be staged at various locations for the purpose of tracking an entity for logistical and health and safety purposes. As part of the team, you will investigate and implement options for expanding this system to communicate with a web-based or networked system for storing and monitoring these records. Furthermore, you will investigate other technologies for tracking assets (e.g., radio-frequency identification (RFID) and computer vision technologies). Your work will include collaborating with EPA's Office of Emergency Management and EPA Regions to implement additional features and fixes as needed.

- Artificial intelligence: As part of the team, you will explore the use of artificial intelligence (e.g., neural networks, machine vision, fuzzy logic) for identifying infrastructure using publicly available imagery (e.g., imagery derived from cell phones, cameras, and Google Street View). The system shall determine the type of infrastructure (e.g., residence, business, hospital) and provide an estimate of construction material based on the characteristics of the building. This application will be used to supplement decontamination and waste management activities following an incident. You will collaborate with researchers to develop the code and tests for evaluating the accuracy of the application.

Required skills

- Basic understanding of coding principles;
- Experience with Agile and waterfall methods;
- Experience in Python and database design/development;
- Experience working with version control software;
- Problem Solving Skills;
- Ability to work in team environment as well as individually; and
- Excellent communication and listening skills.

Desired skills

- Experience with Java or Objective-C, ESRI ArcGIS.

How you will apply your skills

Research and Development Responsibilities:

- Understanding and applying software and hardware for the purpose of collecting and storing information using computer vision and other sensors;
- Applying innovative approaches for designing and developing applications;
- Working with a wide range of programming languages and hardware for developing novel applications;
- Understanding and applying artificial intelligence capabilities and best practices through open source code; and
- Identifying and develop enhancements and additional functionality/capabilities to meet planning, implementation and data acquisition needs.

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Communications Related Responsibilities:

- Participating as a member of the research planning and software development team;
- Supporting needs of the project team to provide input to required Information Technology (IT) data requirements that ORD or other parts of the EPA (e.g., Office of Environmental Information) require to perform IT-related activities;
- Participating in a research team, including maintaining coordination of enhancement and development activities;
- Interacting with program leadership and researchers to understand stakeholder needs;
- Working with stakeholders and end-users to address bugs and conduct application support; and
- Documenting code and software development efforts, to include user guides.

Location: This job will be located EPA's facility in Research Triangle Park, NC.

Salary: Selected applicant will become a temporary employee of ORAU and will receive an hourly wage of $21.59 for hours worked.

Hours: Full time.

Travel: Occasional overnight travel may be required.

Expected start date: The position is full time and expected to begin November 2019. The initial project is through May 14, 2020, with potential optional periods.

Working conditions: You will be supervised by a mentor who will provide day-to-day direction, as well as coach, advise, counsel and review your work. The position will involve work in an administrative setting and is not expected to involve exposure to hazardous elements

Qualifications

- Be at least 18 years of age **and**
- Have at least a bachelor's degree in computer science, data science and information technology, environmental science, environmental policy or other closely related field from an accredited university or college within the last 24 months **and**
- Be a citizen of the United States of America or a Legal Permanent Resident.

EPA ORD employees, their spouses, and children are not eligible to participate in this program.

Eligibility Requirements

- **Citizenship:** LPR or U.S. Citizen
- **Degree:** Bachelor's Degree or Master's Degree received within the last 24 months or anticipated to be received by 12/31/2019 11:59:00 PM.
- **Overall GPA:** 2.00
- **Discipline(s):**

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- **Computer, Information, and Data Sciences** (16 👁)
- **Environmental and Marine Sciences** (13 👁)

Affirmation I certify that I am at least 18 years of age; a recent graduate with at least a bachelor's degree in computer science, data science and information technology, environmental science, environmental policy or other closely related field

of study from an accredited university or college within the last 24 months; a citizen or a Legal Permanent Resident of the United States of America; and not a current employee of EPA ORD or the spouse or child of an EPA ORD employee.

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