Opportunity Title: Post-Doctoral Fellowship with Homeland Security Transportation Lab
Opportunity Reference Code: TSL-Post-Doctoral-SyntheticData-2020

Organization U.S. Department of Homeland Security (DHS)

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Description *ORISE* is continuing *normal program operations during the COVID-19 pandemic. This opportunity will be offered as long as Transportation Security Laboratory is able to complete the onboarding process and ensure a meaningful experience to participants. We encourage you to apply and submit your application as soon as possible. Updates to this opportunity will be provided on this page as needed.*

Looking to solve real world problems through new development of Deep Learning algorithms?

The U.S. Department of Homeland Security (DHS) is offering post-doctoral fellowships with the Transportation Security Laboratory (TSL).TSL is seeking applicants to participate in a new endeavor in synthetic data generation and testing. The need to develop synthetic methods to develop and test new Deep Learning algorithms is paramount and the proposed work is new and cutting edge.

What will I be doing?

The emergence of Deep Learning algorithms to detect explosives and prohibited items in the nation's aviation, public transportation, and infrastructure domains has illustrated the need for new development, test and evaluation methods. TSL is tasked with supporting development and certifying the computed tomography (CT) x-ray systems used for baggage inspection and the active millimeter wave systems for personnel screening that protect our nation's aviation passengers.

As a TSL Post-Doctoral Fellow, you will be a part of a team of TSL staff and researchers focused on a two-fold approach involving x-ray and millimeter wave regimes. The first component involves creating synthetic signatures of prohibited materials from laboratory CT data, and inserting these into acquired CT images of passenger baggage. Also, insuring that the signature and the combined CT image subsequently generated is a high fidelity match to an actual bag and included threat. The second component will use millimeter wave data of actual threats to create synthetic images of personnel with threats for analysis.

Why should I apply?

You will be given challenging assignments, under the guidance of a DHS TSL mentor, who will provide you with a broad perspective of DHS and TSL, knowledge of cutting edge research, and an opportunity to contribute to the mission of the assigned directorate/division. You will have access to unique facilities and subject matter experts in explosives detection and mitigation. This program will provide you opportunities to enhance your academic and professional preparation to pursue a career in disciplines that support the U.S. Department of Homeland Security.

Where will I be located? Atlantic City, NJ

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What is the anticipated start date? Exact start dates will be determined at the time of selection and in coordination with the selected candidates. Applications are reviewed on an ongoing basis and fellowships will be filled as qualified candidates are identified.

What are the benefits?

As a participant with TSL, you will receive:

- Stipend starting at $80,000 based on your academic level and experience
- Health Insurance Allowance
- Relocation Allowance up to $2,000, if you are located more than 50 miles one way from the hosting facility.

Appointments are for a year with the option to extend the appointment for additional years. Extensions are contingent upon project needs and funding availability. The maximum time a participant can remain in the ORISE program is five years from his/her initial start date.

About TSL

The mission of the DHS TSL is to serve as the leading federal laboratory for the applied research, development, integration, and validation of cutting edge science and technology solutions for the detection and mitigation of explosives and conventional weapons threats in order to secure the homeland. TSL's team of physicists, chemists, engineers, and mathematicians is internationally recognized for its unique ability to advance technology from conception to deployment through applied research, development, prototyping, test, evaluation, assessment, certification, system qualifications, and laboratory assessment testing.

For additional information about TSL, visit: https://www.dhs.gov/science-and-technology/transportation-security-laboratory

Nature of the appointment

You will not enter into an employee/employer relationship with ORISE, ORAU, DHS or any other office or agency. Instead, you will be affiliated with ORISE for the administration of the appointment through the ORISE appointment letter and Terms of Appointment.

Although you will not enter into an employee/employer relationship with ORISE, ORAU, DHS or any other office or agency, you must have or be eligible to obtain and maintain a security clearance for the duration of your appointment.

Qualifications **Applicants must meet the following requirements:**

- Have received or expect to complete all requirements for a Doctoral degree by the anticipated start date. Applicants currently pursuing a doctoral degree must provide proof of completion of all degree requirements before the fellowship start date.

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- Be a U.S. Citizen

Preferred Qualifications

Ideally, applicants will be familiar with neural nets, CT reconstructions, SAR imaging, computer imaging and visualizations, and x-ray and millimeter wave physics. This is a large list of attributes. Applicants with complementary skills and a willingness to learn are also encouraged to apply.

A complete application consists of:

- Zintellect profile
- A completed Application - The application includes questions specific to the program.
- Academic Records - 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.
- Current Resume/CV
- One (1) Recommendation - Applicants are required to provide contact information for at least one recommendation in order to submit the application. You are encouraged to request a recommendation from a professional who can speak to your abilities and potential for success as well as your scientific capabilities and personal characteristics. Recommendation requests must be sent through the Zintellect application system. Recommenders will be asked to complete a recommendation in Zintellect. Letters of recommendation submitted via email will not be accepted.

Submitted documents must have all social security numbers, student identification numbers, and/or dates of birth removed (blanked out, blackened out, made illegible, etc.) prior to uploading into the application system. All documents must be in English or include an official English translation.

If you have questions, send an email to DHSEd@orau.org. Please list the reference code [TSL-Post-Doctoral-SyntheticData-2020] of this opportunity in the subject line of the email.

Eligibility Requirements

- **Citizenship:** U.S. Citizen Only
- **Degree:** Doctoral Degree.
- **Discipline(s):**
  - **Chemistry and Materials Sciences** (12 👁)
  - **Computer, Information, and Data Sciences** (16 👁)
  - **Engineering** (27 👁)
  - **Mathematics and Statistics** (10 👁)
  - **Other Non-Science & Engineering** (8 👁)
  - **Physics** (16 👁)
  - **Science & Engineering-related** (1 👁)