Opportunity Title: 2024-2025 Infrastructure Resilience Scholar Program - Fellowship
Opportunity Reference Code: NPS-2024-0006

Organization U.S. Department of Defense (DOD)

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How to Apply Click on *Apply* at the bottom of the opportunity to start your application.

Description

The Naval Postgraduate School (NPS) Center for Infrastructure Defense (CID) leads research that supports the continued operation of critical military and civilian infrastructure systems in the presence of failure, natural disaster, adversarial attack, and surprise. CID supports interdisciplinary senior scholars to work with highly motivated students and develop detailed analyses and implementation plans for lifeline infrastructure systems like electric power, fuel, water, transportation, telecommunications, and supply chains. CID scholars and alumni serve as trusted advisors to the military, government, and private sector on issues surrounding critical infrastructure protection and resilience. For more information about NPS CID, visit: htttp://www.nps.edu/cid

What will I be doing?

The NPS CID Infrastructure Resilience Scholar Program (IRSP) is designed to support talented undergraduate students, graduate students, and postdoctoral scholars to develop valuable skills and gain research experience while assessing the vulnerability and resilience of U.S. infrastructure to future disasters. The 2024-2025 IRSP focus is Caribbean Island water infrastructure, including potable water distribution, stormwater drainage, and water resource management systems.

Since Hurricanes Irma and Maria in 2017, CID has been supporting the Federal Emergency Management Agency to recover and rebuild infrastructure in the U.S. Virgin Islands (USVI). This year, CID is helping lead instrument deployment, data collection, modeling, and analysis efforts within the territory to better characterize USVI water infrastructure systems. This is in collaboration with diverse local stakeholders, including the University of the Virgin Islands (UVI), Witt O'Brien's (WOB), the Virgin Islands Water and Power Authority (VIWAPA), the Virgin Islands Department of Planning and Natural Resources (VIDPNR), and the U.S. Geological Survey (USGS) among many others. Results from this work will directly support ongoing efforts to improve water distribution, drainage, and infrastructure in the territory and protect communities from future storms, droughts, and natural disasters.

Under the guidance of a mentor, you will be participating in diverse research activities, including data collection, analysis, and science communications collaborating with teams in the USVI and Monterey, CA.

Why should I apply?

You will have a hands-on opportunity to expand your knowledge to support your academic and professional goals. Along the way, you will engage in activities and research in several areas. These include, but are not limited to:

- Travel to U.S. islands and military installations to collect on-site, real-world data on water infrastructure condition, function, and operation;
- Develop descriptive models and software for data acquisition, data-model fusion, and system analysis alongside prescriptive models for emergency response, infrastructure upgrade, and long-term planning;
- Assist with real-world decision-making for island and installation water infrastructure upgrades and protection against future threats;

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- Publish new models, data, and analyses in peer-reviewed journals and technical reports; and,
- Network and join a cohort of scholars and researchers across government and academic settings working on water infrastructure vulnerability and resilience research.

Where will I be located?

Location varies. This opportunity supports both in-person at NPS in Monterey, CA and remote participation. Participation in the IRSP requires ability to travel to the U.S. Virgin Islands during the appointment.

What is the anticipated start date?

NPS is ready to make appointments immediately. Exact start dates will be determined at the time of selection and in coordination with the selected candidate. Applications are reviewed on an ongoing basis and fellowships will be filled as qualified candidates are identified.

What is the appointment length?

This appointment is a 6-month research appointment, with the possibility to be renewed for additional research periods. Appointments may be extended depending on funding availability, project assignment, program rules, and availability of the participant.

What are the appointment provisions?

You will receive a stipend to be determined by NPS. Stipends are typically based on a participant's academic standing, discipline, experience, and research facility location. Other provisions may include the following:

- Health Insurance Supplement (*Participants are eligible to purchase health insurance through ORISE)*
- Relocation Allowance
- Training and Travel Allowance

About NPS

The Naval Postgraduate School provides relevant and advanced educational and research experience to commissioned officers of the Naval Service to increase their combat effectiveness and enhance the security of the United States. In support of this mission as well as to sustain academic excellence, NPS and the U.S. Department of the Navy (DoN) foster and encourage an academic program of relevant and meritorious naval research. NPS research supports the needs of the Navy and the U.S. Department of Defense while also building the intellectual capital of Naval Postgraduate School. For more information about NPS, visit: https://my.nps.edu/.

About ORISE

This program, administered by Oak Ridge Associated Universities (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 DoD. Participants do not enter into an employee/employer relationship with ORISE, ORAU, DoD 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. Proof of health insurance is required for participation in this program. Health insurance can be obtained through ORISE. For more information, visit the ORISE Research Participation Program at the U.S. Department of Defense.

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Qualifications

The qualified candidate is a U.S. Citizen who is 18 years of age or older at the time of application and meets one of the following conditions:

- Currently enrolled as an undergraduate or graduate student at an accredited institution of higher education pursing a degree in a science, technology, engineering, or mathematics (STEM) discipline, or have interest or experience in a STEM field.
- Have completed an undergraduate (B.A., B.S. or equivalent) or graduate (M.S., DVM, Ph.D., MD or equivalent) degree within three years of the application deadline in a STEM discipline or have interest or experience in a STEM field.

The qualified candidate is also:

- Familiar with office automation software such as Microsoft Word, Excel, and PowerPoint.
- Able to participate independently on assigned tasks in between meetings with Mentor.
- Able to participate virtually using online collaboration and meeting tools such as Microsoft Teams (has computer and Internet access).
- Able to travel for short periods to Monterey, CA and other locations in the Caribbean and/or US.
- Knowledgeable of and interested in learning Caribbean and USVI water infrastructure and related issues (e.g., rainwater catchment, water hauling, desalination, well and aquifer assessment, coastal drainage and flooding).

The highly qualified candidate has knowledge of some or all of the following:

- Fluency in Python or R. Python preferred.
- Knowledge of sensor placement and instrumentation, especially for water systems (e.g., pressure, flow, or water quality sensors).
- Knowledge of open-source water system modeling tools, especially in Python (e.g., EPANET, Water Network Tool for Resilience - WNTR, EPA SWMM, pipedream).
- Knowledge of geographic information systems (GIS) data and analysis for water infrastructure.
- Knowledge of mathematical modeling and optimization with commercial solvers, especially in Python (e.g., Pyomo, PySP, Gurobi, CPLEX).
- Writing code interfaces between different tools and/or developed graphical user interfaces for an analysis tool (e.g., Dash, R-Shiny, JavaScript/TypeScript, AWS, Azure).

Application Requirements

A complete application consists of:

- Zintellect Profile
- Educational and Employment History
- Essay Questions (goals, experiences, and skills relevant to the opportunity)
- Resume (PDF) with cover letter introducing the applicant's particular interests in the activities described in this announcement, along with (1) how your background and skills fit IRSP and (2) how participation in IRSP will advance your career ambitions.
- Transcripts/Academic Records - Please upload a copy of a transcript for your current or most recent degree program that meets the disciplinary qualifications of the opportunity. Click here for detailed information about acceptable transcripts.

If you have questions, send an email to navy@orise.orau.gov. Please list the reference code of this

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opportunity [NPS-2024-0006] in the subject line of the email. Please understand that ORISE does not review applications or select applicants; selections are made by the sponsoring agency identified on this opportunity. All application materials should be submitted via the “Apply” button at the bottom of this opportunity listing. Please do not send application materials to the email address above.

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!

Point of Contact Richard

Eligibility Requirements

- **Citizenship:** U.S. Citizen Only
- **Degree:** Bachelor's Degree, Master's Degree, or Doctoral Degree received within the last 36 months or currently pursuing.
- **Discipline(s):**
  - **Chemistry and Materials Sciences** (12)
  - **Communications and Graphics Design** (2)
  - **Computer, Information, and Data Sciences** (17)
  - **Earth and Geosciences** (21)
  - **Engineering** (27)
  - **Environmental and Marine Sciences** (14)
  - **Life Health and Medical Sciences** (51)
  - **Mathematics and Statistics** (11)
  - **Physics** (16)
  - **Science & Engineering-related** (2)
  - **Social and Behavioral Sciences** (29)