Opportunity Title: Maintaining Information Security of Classified Physical Locations Despite Increasing Wireless Connectivity
Opportunity Reference Code: ICPD-2025-20

Organization Office of the Director of National Intelligence (ODNI)

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How to Apply **Create and release your Profile on Zintellect** – Postdoctoral applicants must create an account and complete a profile in the on-line application system. **Please note: your resume/CV may not exceed 3 pages.**

Complete your application – Enter the rest of the information required for the IC Postdoc Program Research Opportunity. The application itself contains detailed instructions for each one of these components: availability, citizenship, transcripts, dissertation abstract, publication and presentation plan, and information about your Research Advisor co-applicant.

Additional information about the IC Postdoctoral Research Fellowship Program is available on the program website located at: https://orise.orau.gov/icpostdoc/index.html.

If you have questions, send an email to ICPostdoc@orau.org. Please include the reference code for this opportunity in your email.

Application Deadline 2/28/2025 6:00:00 PM Eastern Time Zone

Description **Research Topic Description, including Problem Statement:**

Wireless connectivity is becoming standard within more and more consumer electronics (i.e. wi-fi in coffee machines), and other more industrial electronic equipment is following this trajectory.

A large area of focus in this problem will be on Building Management and Control Systems (BMCS) as they transition to wireless connectivity, operating as building wide mesh networks. Industries, from construction to appliance providers, are evolving towards these future systems for cost and maintenance efficiencies, as well as ease of use.

Building requirements for classified (information controlled) facilities are necessarily prescriptive with wireless communications. As radio frequency emissions are a growing dynamic, the secure coexistence of these trends with classified facilities needs to be properly understood to duly inform security considerations.

Future building design, engineering and construction potentially sees fewer wired or physical conduit infrastructures. Emerging national and international regulations around emergency management systems, age / functionality / maintenance standards, and grandfathering legacy systems, are further trends impacting upon building security. Understanding how these can coexist is becoming more important.

Example Approaches:

- Market scan for thorough understanding of BMCS marketplace and likely future trends, to inform the rest of your research.
- Identify security features and asses general security of wireless BMCS / building integrated systems.
- Understanding/mitigating mesh networks impact on emanations security.

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- Methods for/effectiveness of identifying uncharacteristic emissions from devices (primarily edge devices in a mesh network).

Relevance to the Intelligence Community:

Government premises housing sensitive information are required to ensure this information stays inside the premises. Maintaining security of information and premises is critical to the National Intelligence Community (NIC), and the outcomes of this research project will help inform security policy within the NIC.

References:

- Rose, S., Borchert, O., Mitchell, S. and Connelly, S. (2020), 'Zero Trust Architecture', Special Publication (NIST SP), National Institute of Standards and Technology, Gaithersburg, MD, [online], https://doi.org/10.6028/NIST.SP.800-207, https://tsapps.nist.gov/publication/get pdf.cfm?pub id=930420
- Chan R, Yan WK, Ma JM, Loh KM, Yu T, Low MYH, Yar KP, Rehman Hand Phua TC (2023) 'IoT devices deployment challenges and studies in building management system', Front. Internet. Things 2:1254160. DOI: 10.3389/friot.2023.1254160.

Key Words: Wireless, mesh networks, emanations security, cyber security, Building Management Systems (BMS), control systems, Building Management and Control Systems (BMCS), connectivity.

Qualifications

Postdoc Eligibility

- U.S. citizens only
- Ph.D. in a relevant field must be completed before beginning the appointment and within five years of the appointment start date
- Proposal must be associated with an accredited U.S. university, college, or U.S. government laboratory
- Eligible candidates may only receive one award from the IC Postdoctoral Research Fellowship Program

Research Advisor Eligibility

- Must be an employee of an accredited U.S. university, college or U.S. government laboratory
- Are not required to be U.S. citizens

Point of Contact

Keri Tarwater

Eligibility Requirements

- **Citizenship:** U.S. Citizen Only
- **Degree:** Doctoral Degree.
- **Discipline(s):**
  - **Chemistry and Materials Sciences** (12 👁)
  - **Communications and Graphics Design** (3 👁)
  - **Computer, Information, and Data Sciences** (17 👁)
  - **Earth and Geosciences** (21 👁)
  - **Engineering** (27 👁)
  - **Environmental and Marine Sciences** (14 👁)

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- **Life Health and Medical Sciences** (45 👁)
- **Mathematics and Statistics** (11 👁)
- **Other Non-Science & Engineering** (2 👁)
- **Physics** (16 👁)
- **Science & Engineering-related** (1 👁)
- **Social and Behavioral Sciences** (30 👁)