

**Opportunity Title:** Algorithm Development for Biomedical Applications  
Internship

**Opportunity Reference Code:** USAISR-2020-0029R



**Organization** U.S. Department of Defense (DOD)

**Reference Code** USAISR-2020-0029R

**How to Apply** Components of the online application are as follows:

- Profile Information
- Educational and Employment History
- Essay Questions (goals, experiences, and skills relevant to the opportunity)
- Resume (PDF)
- Transcripts/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. [Click here for detailed information about acceptable transcripts.](#)
- 2 Recommendation(s)

Submitted documents must have all social security numbers, student identification numbers, and/or dates of birth removed (blacked out, blackened out, made illegible, etc.) prior to uploading into the application system.

If you have questions, send an email to [ARMY-MRMC@orise.orau.gov](mailto:ARMY-MRMC@orise.orau.gov). Please list the reference code of this opportunity in the subject line of the email.

All documents must be in English or include an official English translation.

Letter of Recommendation: While a letter of recommendation is not required to be considered, applicants are required to provide contact information for one recommendation in order to submit the application. Applicants are encouraged to request a letter of recommendation before submission as this may help reviewers have a better understanding of the applicant's qualifications and interests. If selected, a letter recommendation must be submitted on your behalf upon acceptance of the appointment.

**Description** The USAISR has a Clinical Decision Support and Automation Department, whose goal is to create information technology that will assist Medics in providing life-saving interventions in the Prolonged Field Care Environment. This department also automates existing technology to improve critical care, combat, and burn injuries. The USAISR has at its disposal a robust vivarium with clinical models in which these technologies can be tested or validated. It also has simulation models in which these technologies can be tested and validated. For more information, visit <https://usaisr.amedd.army.mil/>

Sepsis is a life-threatening inflammatory response to an infection that can ultimately lead to complications such as multi-organ failure and death. The objective of this study is to evaluate open-source and/or commercialized early sepsis prediction algorithms that are available and determine accuracy and timing of sepsis within our burn subject population. The candidate will help develop, under the guidance of a mentor, a device to gather the required data sourced from the electronic medical records and run the algorithms against that dataset.

Learning opportunities include:

- Gain experience in the development of data collection tools for medical devices that are compatible with DoD IT infrastructure.
- Gain experience creating algorithms.
- Develop clinical knowledge about burn critical care and infection.
- Gain experience working with burn care clinicians.

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### **Appointment Length**

This appointment is a twelve 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.

### **Participant Benefits**

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

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

### **Nature of Appointment**

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

**Qualifications** Candidate should hold or be currently pursuing a Bachelor's, Master's, or Doctoral degree with a 3.0 GPA and:

- Hands-on experience with C/C++ and Java programming languages
- Hands-on experience working with hardware device drivers
- Experience with software – hardware integration
- Interest in biomedical software applications
- Familiar with scientific research, scientific writing, data analysis, and presentation skills













### **Preferred skills and background:**

- Experience with biomedical instrumentation integration
- Understanding of basic human physiology and anatomy concepts
- Familiar with Java JNI and/or JNA
- Familiar with the LabView programming platform
- Experience developing custom data-acquisition and processing software for biomedical research experiments.
- Experience developing software for clinical applications
- Familiar with device and computer data communication protocols and technologies (TCP/IP, UDP, USB, Ethernet, etc.)
- Familiar with version control systems (Git, SVN, etc.)
- Familiar with FDA medical device regulations
- Able to perform technical analyses, documentation, and maintenance of data acquisition and/or application products
- Familiar with HDF5 files and SQL databases
- Familiar with statistical software and programming including Python and R

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**Eligibility  
Requirements**

- **Citizenship:** U.S. Citizen Only
- **Degree:** Bachelor's Degree, Master's Degree, or Doctoral Degree received within the last 60 months or currently pursuing.
- **Overall GPA:** 3.00
- **Discipline(s):**
  - **Communications and Graphics Design** (2 )
  - **Computer, Information, and Data Sciences** (16 )
  - **Earth and Geosciences** (21 )
  - **Engineering** (27 )
  - **Environmental and Marine Sciences** (14 )
  - **Life Health and Medical Sciences** (46 )
  - **Mathematics and Statistics** (10 )
  - **Other Non-S&E** (2 )
  - **Other Physical Sciences** (12 )
  - **Other S&E-Related** (1 )
  - **Physics** (16 )
  - **Social and Behavioral Sciences** (27 )