

Opportunity Title: ORNL Robotic Systems and Controls Technology Engineer

Post-Master's Research Associate

Opportunity Reference Code: ORNL20-36-ETSD

Organization Oak Ridge National Laboratory (ORNL)

Reference Code ORNL20-36-ETSD

Description Oak Ridge National Laboratory (ORNL) is the largest U.S. Department of Energy (DOE) science and energy laboratory, conducting basic and applied research to deliver transformative solutions to compelling problems in energy, environment, and security.

Major Duties and Responsibilities:

- Assist in the design, development, and testing of a control system for a novel-format, metal powder bed additive manufacturing system. System needs include:
 - Linear motion control and coordinated multi-axis motion
 - Robotic path planning
 - Human-Machine Interface
 - Sensor systems and data acquisition
- Collaborate with a team of engineers including mechanical, material, electrical, and computer scientists that are based both at ORNL and in industry on the development of this system.
- Help in the development of novel techniques for coordinating multi-axis motion and laser sub-systems for supporting high-speed and large-scale metal powder bed printing.
- Tailor the development of an advanced manufacturing system for the needs of the energy sector with respect to component size, complexity, materials, and production speed.

Some activities may require export control and/or national security interests. Therefore, U.S. Citizenship is preferred.

Qualifications Candidates should have recently completed a master's degree in mechanical engineering or electrical engineering, with experience in mechatronics and robotics applied to advanced manufacturing systems, including welding and/or metal additive manufacturing.

Required Skills:

- Excellent communication skills, both written and oral, to support regular interactions with sponsors, peer reviewers, and others and to prepare reports, proposals, publications, and journal articles is required.
- Strong interpersonal and communication skills to support team building and leadership are required.
- The demonstrated ability to manage project schedules, scopes, and budgets is required.

Preferred Skills:

- Experience with motion control, real-time control system development, sensor integration, and data collection on robotic platforms.
- Fundamental understanding of metallic materials processing through



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welding and/or additive manufacturing.

- Knowledge of industrial robotics, motion control, and kinematics.
- Skilled in MATLAB Simulink, LabVIEW, and C programming languages.
- Experience with sensor integration and real-time closed-loop control.
- Understanding of metal additive manufacturing processes and associated challenges.

Living in East Tennessee: While the opportunity to work at ORNL is an amazing experience in itself, it's easy to overlook everything else East Tennessee has to offer if you haven't had the opportunity to spend time here. From spending your weekends downtown at Knoxville's farmers market, the Rhythm n' Blooms Music Festival, or the Dogwood Arts Festival, to some of the best hiking, kayaking, and camping in the U.S., East Tennessee has something to offer everyone.

The ORNL Post-Master's Research Associate Program is administered by Oak Ridge Associated Universities through its contract with DOE to manage the Oak Ridge Institute for Science and Education (ORISE).

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| Eligibility | <ul style="list-style-type: none">• Citizenship: U.S. Citizen Only |
| Requirements | <ul style="list-style-type: none">• Degree: Master's Degree received within the last 60 month(s).• Discipline(s):<ul style="list-style-type: none">◦ Engineering (3 )◦ Mathematics and Statistics (1 )• Age: Must be 18 years of age |

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