Software Engineer

Job Summary

Woods Hole Oceanographic Institution is currently searching for two Software Engineers to join the Applied Ocean Physics & Engineering Department. These are regular, full-time, exempt positions and are eligible for benefits. The level of this role will be determined by the selected candidates level of education and experience. The candidates will be hired into an Engineer I, II or Research Engineer role.

The Deep Submergence Laboratory (DSL) at Woods Hole Oceanographic Institution is looking to hire a software engineer to join our team. DSL designs, builds, and operates underwater robots with unique science-focused capabilities for the ocean sciences community. Our submersibles are used around the world in some of the deepest parts of the ocean to survey and collect scientific samples and data. Our development and operational goals are focused on providing the tools and assets necessary for users to investigate the world’s oceans. More information can be found at: https://ndsf.whoi.edu/

The Software Engineer will work directly with the Autonomous Underwater Vehicle (AUV) Sentry capable of exploring the ocean down to 6,000 meters. The AUV Sentry program requires engineering support for both on-shore engineering and at-sea field operations. At-sea field operations can require significant travel. Candidates will be expected to spend up to 100 days a year in the field, total time away will not be consecutive.

With some supervision to achieve assigned objectives, the Engineer II position identifies and participates in engineering projects in support of scientific and research activities through the demonstration of one or more specialized skills. This position will be expected to work on tasks requiring creativity and independent thinking, along with a proven understanding of fundamental research and engineering principles.

With little supervision, the Research Engineer position will work creatively and independently to establish objectives, meet deadlines, and complete difficult engineering assignments by demonstrating full competency in one or more engineering areas; assists substantively in planning technical aspects of experiments, as well as design, testing, and use of major system components.
Essential Functions
ENGINEER I/II Level:

- Develop technologies associated with deep submergence vehicles
- Develop device drivers for vehicle sensors
- Develop data processing tools and process vehicle data
- Develop real time control code
- Work within a small team dedicated to developing big ideas
- Participate in field operations launch and recovery of deep sea vehicles
- Conceptualizes solutions to engineering problems;
- Develops, calibrates, and tests new designs and techniques;
- Develops computer code, microprocessor code, and uses CAD, CAE tools;
- Troubleshoots electronic/mechanical systems;
- Participates in report writing to document developments and tests. May single-author reports and articles;
- May supervise other personnel.

RESEARCH ENGINEER Level:

- Develops major portions of electronic or mechanical systems with supervision consisting primarily of milestone progress reviews; frequently acts as Project Engineer on major projects;
- Conducts hardware developments such as new sensor techniques, autonomous battery-powered instrumentation, control systems for manned and robotic submersibles, etc.;
- Writes complex computer code for use in instrumentation, system modeling, and electronic design;
- Develops new sampling methods involving complex mechanical, electrical, or electronic instrumentation;
- Plays a significant role in report writing and proposal preparation and may single-author results;
- Interacts with scientific and technical staff colleagues to foster research ideas, develop and hone research/experimental skills;
- May supervise one or more Engineering Assistants and/or Engineers.
NON-ESSENTIAL FUNCTIONS:

- As deemed necessary by supervisor

Education & Experience

Engineer I*

- Engineering degree or other appropriate discipline with minimal work experience, or evidence of an established, specialized engineering skill gained through experience in the absence of a formal degree.

Engineer II Level*

- Master's degree in an engineering or appropriate field with minimal experience, or
- Bachelor's degree in engineering or appropriate field with several years (2) of relevant experience.

Research Engineer Level*

- Ph.D. in related engineering field, or
- Master's degree in an engineering or appropriate field with several years of related experience, or
- Bachelor's degree in an engineering or appropriate field with more than five years of related experience. In the absence of a formal degree, considerable equivalent work experience is required. Successful candidates will have demonstrated the technical skill, motivation, independence, and creativity necessary to complete difficult engineering tasks.

All Levels:

- Electrical Engineering courses / degrees / skills are strongly desired
- Previous field experience
- Low level electrical or mechanical Experience
- Familiarity with Gazebo or other simulation environments
- Embedded system development or firmware experience (PIC, Arduino, etc)
- Experience with 3D modeling systems is required. Inventor preferred but others acceptable.
- Strong hands on skills are required.
- Familiarity or experience with basic manufacturability is desired.
- Electrical/Electronic debug skills are strongly desired.
- Any prior software experience is a plus.
• This position requires an extremely strong ability to learn rapidly and independently with intermittent mentorship.

• Outstanding interpersonal and communication skills and ability to work collaboratively

• Experience with an object oriented programming language

• Experience with C++, Python, MATLAB, Qt Framework

• Experience with the Robot Operating System (ROS)

• Exposure to version control (Git, Mercurial, etc)

• Any code repository links or software/robotics project descriptions are welcome

*Position level will be determined by the selected candidate’s level of education & experience.

Physical Requirements

Physical duties for this position include but are not limited to, ability to lift 25-50 lbs. independently, above the shoulders, 3 times per day; carry 25-50 lbs., 4 times per day. Visual abilities to include peripheral vision, depth perception, and ability to distinguish basic colors. Hearing requirements include the ability to hear and respond to instructions, communicate effectively, and be able to respond to coworkers. Other physical tasks include occasional prolonged standing/walking; use of hands for basic/fine grasping and manipulation, reaching above the shoulders, kneeling, bending and stooping, however this role is mostly sedentary. Other occupational requirements include talking, traveling, working around others, and with others. Will be exposed to dust or other irritants and electrical/mechanical/power equipment hazards as well as grease & oils. Physical duties are subject to change.

Sea Duty

May work at least 8 hours per day and, at times in excess of 12 hours per day, 7 days per week. Sleep and work hours can deviate from those on land. May be expected to work on watch schedule (such as 8 hours on and 8 hours off or 12 hours on and 8 hours off) for all or part of a cruise or to work as hours are needed to accomplish the planned work. May need to travel during holidays and for long distances to and from foreign ports. May experience rudimentary living and working conditions, with shared and basic living quarters and laboratories. May experience bad or extreme weather conditions, including heavy seas, winter weather or hot, tropical weather. Work on deck may occur in both hot and cold conditions around the clock. Sea conditions will lead to active ship motion. Should be able to climb steep and vertical ladders and able to enter and exit compartments through hatches, doors, and sills. Should be able to carry heavy gear and participate in the loading and unloading of the ship as well as in the activities on deck and in the labs during the cruise. Shipboard environment may include: confined areas, shared sleeping quarters (berths) and bathroom facilities, small and basic berthing, fixed meal times and basic menus. Modest levels of heating, cooling, ventilation, and illumination, limited or no email and internet access and limited off-duty and recreational facilities (library, lounge, movies). May be exposed to potential allergens and irritants, including paint fumes. May experience constant and intermittent loud noises, and slippery and uneven surfaces.