



W. M. KECK OBSERVATORY

On the summit of Mauna Kea, Island of Hawai'i

POSITION DESCRIPTION

Position Title:	Software Engineer	Department:	Software
Incumbent:	Vacant	FLSA Status:	Exempt
Reports To:	Senior Software Engineer	Job Code:	
Supervises:	N/A	Date:	June 7, 2019

Summary

This position is responsible for a variety of duties related to developing, testing, deploying and maintaining software for control solutions used at the observatory as well as integrating and maintaining software for science instruments delivered by partner institutions.

Essential Functions

- Design, code, integrate, and test control software to implement new observatory control systems.
- Maintain, enhance, and optimize existing software systems.
- Provide technical support during and post commissioning of software systems.
- Provide and maintain software documentation and end-user documentation for operations handover to assure updated and accurate reference documentation is available when needed.
- Provide end-user support and assist in troubleshooting of issues when they arise, at times out of regular hours.
- Ensure the quality and reliability of the software base by applying software best practices and standardized change control, build, and release strategies.
- Provide highly effective collaboration across disciplines. This includes working with software, electronic, and opto- mechanical engineers as well as scientists at the observatory and external collaborators at other institutions. Collaborative assignments include engagement on systems engineering tasks and active participation on integration testing of subsystems in the laboratory and on the telescope.
- Investigate and correct chronic operational performance and reliability problems.
- Collaborate with the summit day crew:
 - Support summit staff and others, to ensure telescope software subsystems are ready for night-time operations.
 - Train technicians, as necessary, in the understanding and use of software systems.

Additional Responsibilities

- Perform other duties consistent with the scope of the position.

Required Qualifications

- Bachelor of Science or equivalent in Computer Science, Electrical Engineering, Physics, Mathematics or other relevant engineering or science field.
- Experience in development and maintenance of distributed control systems for engineering or scientific applications.
- Hands-on experience with real-time or near real-time control systems.
- Direct experience implementing and maintaining complex automation controls (such as device control, motion control and sequence control) in a scientific or industrial setting.

Preferred Qualifications

- Strong math skills with a demonstrated ability to apply it for control applications.
- Experience programming in distributed control frameworks such as EPICS.
- Experience in adaptive optics systems.
- Experience with detector interfaces, image analysis and coordinate transformation processing.
- Experience programming motion controllers, such as PMAC or Galil, embedded controllers, and/or PLCs.
- Experience advancing system software infrastructure and architectures with evolving technologies including COTS.
- Experience at an astronomical observatory or high energy physics experiment facility.

Skills

- Microsoft Office proficiency.
- Broad knowledge of modern software engineering practices especially in areas of re-use and testability.
- Competency in Unix/Linux, C, and at least one of the following domain specific languages: MatLab, IDL, LabVIEW, or Function Block.
- Strong competency using O-O paradigm and design patterns in delivering software based solutions in Java or C++.
- Practical experience of change control, build and release management processes.
- Has a sound working knowledge of software concepts such as process and task management, multi-threading, inter process communications, and network programming in distributed control environments.
- User Interface development with Java, Qt, Python, Tcl/Tk or other toolkits.

Competencies

To perform the job successfully, an individual should demonstrate the following competencies:

- **Communication:** Ability to communicate effectively and concisely at all levels.
- **Interpersonal skills:** Ability to build collaborative, effective relationships.
- **Professionalism:** Tactful; approachable; stays calm under pressure; treats others with respect and consideration; accepts responsibility for own actions; follows through on commitments.

Other Requirements

- Willingness to commit to WMKO core values: *Safety, Integrity, Respect, Discovery and Service.*
- Willingness to commit to WMKO cultural values: *Education/Learning, Communication, Teamwork, Rewarding Work Environment, Excellence, Community Involvement.*
- Willingness and ability to occasionally work nights and weekends.
- Ability to work in a constant state of alertness and in a safe manner.

Physical Demands

These physical demands are representative of the physical requirements necessary for an employee to successfully perform the essential functions of the job. This is *not* a complete list of the physical demands that may be required.

- **Sit:** Remain in the seated position
- **Use hands/fingers:** Operate, activate, use, prepare, inspect, place, detect and position.

- **Talk/hear:** Express or exchange ideas by means of the spoken word to impart oral information to clients or to the public and to convey detailed spoken instructions to other workers accurately, loudly, or quickly.
- **Lift, carry weight:** Raise or lower an object from one level to another (includes upward pulling) up-to 25 pounds.

Work Environment

This job operates in a professional office environment. This role may use standard office equipment such as computers, telephones, photocopiers, filing cabinets and fax machines.

The above information on this job description has been designed to indicate the general nature and level of work performed by an employee in this classification. It is not to be interpreted as a comprehensive inventory, or all duties, responsibilities, and qualifications of employees assigned to this job. Management has the right to add to, revise, or delete information in this description. Reasonable accommodations will be made to enable qualified individuals with disabilities to perform the essential functions of this position.

Incumbent	Date	Supervisor	Date
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A copy of the current Position Description with both employee and supervisor signatures is to be kept on file in the Human Resources office.