



Knox Mueller

Software Engineer II, C and C++ Equipment Control

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STRENGTHS

- 🔧 **Systems debugging**
Traced hardware and software behavior during difficult defects, then verified fixes through repeatable laboratory tests.
- ⚙️ **Control software**
Built motion and device control features that connected precise equipment behavior with dependable production workflows.
- 💬 **Technical communication**
Turned requirements, test evidence, and defect findings into clear documentation that helped teams decide faster.
- 🤝 **Customer partnership**
Worked through reported software issues with engineering and customer teams, keeping troubleshooting practical and focused.
- ✅ **Validation discipline**
Used simulators, test benches, and laboratory checks to catch integration issues before broader equipment use.

SKILLS

C C++ Real time control
Motion control
Embedded programming
Multi threading CAN Bus C#
.NET Visual Studio Matlab
Testing Debugging
Documentation
Customer communication

SUMMARY

Software Engineer II with four years of professional experience building C and C++ software for embedded, real time equipment control environments. Develops **motion control**, multithreaded applications, device communications, simulator based testing, **laboratory validation**, **user interface prototypes**, and data analysis for complex electromechanical systems. Translates engineering and customer requirements into **software specifications**, maintainable implementations, test plans, and clear technical documentation. Diagnoses difficult defects across hardware and software boundaries by interpreting logs, device behavior, and test results, then applying practical fixes. Hands on experience includes CAN Bus, C#, .NET, Visual Studio, and Matlab. Clear communication supports productive design reviews, customer troubleshooting, project scheduling, and consensus across controls, systems, test, and customer facing teams. Ready to contribute disciplined debugging and semiconductor equipment expertise to reliable precision equipment software.

EXPERIENCE

Software Engineer II, Equipment Control

IonPeak Automation 📅 July 2024 - Present 📍 Austin, TX

Owns C++ software for real time motion control and semiconductor equipment, supporting device integration, defect resolution, validation, documentation, and cross functional delivery. Partners with controls, systems, test, and customer facing teams on requirements, schedules, and production reliability.

- Delivered **C++ motion control** software for semiconductor equipment, improving reliable operation across precision device workflows.
- Diagnosed difficult real time defects through logs and hardware tests, restoring stable equipment behavior.
- Created **software specifications** and **test plans** for simulator and laboratory validation activities.
- Built multithreaded control features supporting coordinated **motors**, sensors, pumps, and **flow controllers**.
- Presented design decisions clearly during reviews, helping controls and test teams reach practical consensus.

Software Engineer, Embedded Systems

VectorArc Instruments 📅 September 2022 - June 2024 📍 Round Rock, TX

Developed embedded C and C++ applications for electromechanical instruments, with focus on CAN Bus communications, **simulators**, **test benches**, Matlab analysis, and laboratory validation. Converted engineering requirements into documented implementations and repeatable verification workflows.

- Implemented embedded **C** and C++ device communications through **CAN Bus**, improving diagnostic visibility during validation.
- Created simulator scenarios and test bench procedures that exposed integration defects before laboratory deployment.
- Analyzed **Matlab** data from equipment tests, guiding control adjustments and clearer engineering decisions.
- Documented software behavior, interface assumptions, and test evidence for cross team technical reviews.
- Resolved customer reported software issues through structured troubleshooting and clear follow up communication.

Associate Software Engineer, Device Control

MicroAxis Controls 📅 June 2021 - August 2022 📍 Georgetown, TX

LANGUAGES



MY CAREER



- Software Engineer II, Equipment Control at IonPeak Automation (2.2 Years)
- Software Engineer, Embedded Systems at VectorArc Instruments (1.8 Years)
- Associate Software Engineer, Device Control at MicroAxis Controls (1.2 Years)

- Supported device control software development in C# and C++, debugging, user interface work, and laboratory verification. Built early career depth by connecting software behavior with hardware results, learning disciplined test practices, and communicating findings across engineering teams.
- Developed **C#** device control features in **Visual Studio**, supporting clearer operator workflows during laboratory verification.
 - Debugged hardware and software interactions by tracing logs, interface states, and repeatable laboratory conditions.
 - Created validation procedures for control updates, giving engineers consistent evidence before release decisions.
 - Collaborated with senior engineers on **software specifications**, defect analysis, and practical implementation choices.
 - Recorded test findings and customer observations, improving handoffs between development and verification teams.

PROJECTS

Motion Control Simulator 📅 2025

Created a simulator concept for coordinated motion control, sensor feedback, and equipment state analysis. Focus centered on safer validation before laboratory hardware access.

CAN Bus Test Bench 📅 2024

Built a structured test bench approach for CAN Bus device communication, fault reproduction, and diagnostic review. Clear evidence supported faster software troubleshooting.

LEADERSHIP & AWARDS

- Selected for peer recognition after resolving a difficult equipment control defect during laboratory validation.
- Trusted as a design review contributor for clear documentation, practical debugging, and consensus building.
- Recognized by engineering partners for dependable customer troubleshooting and timely technical follow up.

EDUCATION

Bachelor's Degree in Computer Engineering

Texas State University 🎓 GPA: 3.7 📅 2021 📍 San Marcos, TX

Coursework: *Embedded systems, real time computing, control systems, computer architecture*

CERTIFICATIONS

- Microsoft Learn: C# Fundamentals 📅 2025
- University Continuing Education: Real Time Embedded Systems 📅 2024

TECHNICAL SKILLS

- **Programming Languages:** C, C++, C#
- **Real Time Systems:** Real time control, motion control, embedded programming
- **Concurrency:** Multi threading, thread synchronization, concurrent processing
- **Device Communications:** CAN Bus, sensor interfaces, equipment communications
- **Development Tools:** Visual Studio, .NET, C# development
- **Analysis Tools:** Matlab, data collection, data analysis
- **Testing Systems:** Simulators, test benches, laboratory validation
- **Software Quality:** Debugging, defect analysis, test plans
- **Documentation:** Software specifications, technical documentation, user procedures
- **Equipment Control:** Robots, motors, pumps, flow controllers

PROFESSIONAL AFFILIATIONS

- Association for Computing Machinery, technical member focused on software engineering practice.

- IEEE, member interested in embedded systems, controls, and computer engineering.

ADDITIONAL INFORMATION

Work Status : Authorized to work in United States. No sponsorship required.

REFERENCES

AVAILABLE ON REQUEST