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Applied Materials - Yield Technology Group
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Regensburg, 19.06.2025

Software Engineer C/C++ Developer Application

Respected Hiring Team,

I am thrilled to apply for the Software Engineer - C/C++ Developer position at Applied Materials, a company that continues to redefine semiconductor innovation with its recent breakthrough in chip wiring technology. Your October 2024 advancement, combining a ruthenium-cobalt binary liner with enhanced low-k dielectric material to scale copper wiring to the 2nm node, showcases your commitment to powering AI and high-performance computing with up to 25% improved efficiency. I am highly motivated to contribute my embedded systems expertise to support Applied Materials' mission of driving cutting-edge semiconductor solutions.

During Master's program, focusing on IoT health solutions, I utilized STM32CubeIDE and C for firmware development on an STM32 microcontroller to build a wearable health monitoring device. The system integrated sensors for vital signs (temperature, SpO2, heart rate, humidity, ambient temperature, motion) using I2C and SPI for reliable data acquisition, while UART facilitated communication with an ESP WiFi module for wireless data transfer to a local server hosting a web GUI. Key firmware modules were developed to manage sensor polling, GPIO for LED indicators, and an emergency button. I also optimized power consumption for a 5-hour battery life using STM32 sleep modes. The web interface enabled real-time data visualization and historical analysis, accessible via any browser on the local network. Parallel to my academic pursuits, during nine months at AVL, I worked on the Adaptive AUTOSAR middleware (Service Oriented Architecture) and developing its applications in C++. These Adaptive Applications were deployed on a custom Real Time Linux Operating System using Yocto project. After this, I continued at AVL for my Master's thesis, where I was tasked with upgrading their legacy FMU Generation Utility (written in C++) from the FMI 2.0 to the FMI 3.0 standard, thereby enhancing the functionality of the existing tool for Co-simulation of automobile parts build in different systems like MATLAB, C++ etc. In my Thesis, I also leveraged Google Protocol Buffers (ProtoBuf) through ASAM OSI for efficient data serialization, streamlining integration of sensor and environmental models in driving simulations, enhancing virtual testing capabilities. At Persystems, I was a Junior C++ Developer, where I developed Virtual TestBench, a Qt Desktop application for simulations of electrical components, leveraging Persystems' proprietary library. My responsibilities included designing the UI/UX in the Qt Creator IDE with C++ to ensure a seamless user experience. I have also implemented the application's logic by connecting UI widgets to custom slots, using Qt's signal-slot mechanism to manage data flow between the UI and the backend operations interfacing with Persystems' testbench library. Additionally, I have built a separate license check application for Virtual TestBench using Qt and C++.

Drawing from my Master's work developing IoT health solutions in C and managing complex C++ projects at AVL, alongside my current role at Persystems refining simulation software, I am well-prepared to excel as a Software Engineer - C/C++ Developer at Applied Materials. My extensive experience with C++ and the Qt framework, demonstrated through developing Virtual TestBench for electrical component simulations, aligns seamlessly with your need for robust software to control electron beam systems and process images on Linux and real-time OS. My hands-on expertise with real-time Linux systems using Yocto and low-level protocols like I2C, SPI, and UART, honed during my wearable device project, equips me to handle device control, data acquisition, and debugging effectively. My proficiency in CI/CD pipelines and Git, gained at AVL and Persystems, ensures I can maintain high-quality standards through organized software development processes. Moreover, my strong communication skills in English and German will enable me to collaborate effectively with your global team, contributing to Applied Materials' cutting-edge semiconductor innovations.

Among the many skills I have honed throughout my career, teamwork stands out as the most pivotal. My past experiences have emphasized the fundamental truth that sustainable solutions are often the result of collaborative efforts, rather than individual brilliance. I am eager to become part of the team and am committed to contributing my utmost from the very start, beginning immediately.

I would be greatly honoured to receive an invitation for an interview.

Yours sincerely

Regensburg, 19.06.2025