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Software Developer Application

Respected Hiring Team,

I am excited to apply for the Software Developer position at the Institut für Nukleare Entsorgung at KIT, where your team has made significant progress in 2025 by developing advanced simulation models for nuclear waste disposal. This achievement, highlighted in a collaborative project with international research bodies focusing on innovative containment technologies, showcases your commitment to enhancing safety assessments for long-term storage. I am deeply motivated to contribute my software development skills to support KITs mission of advancing cutting-edge research in nuclear safety.

During my Master's program, focusing on AI, I primarily used Python and Ubuntu as my development environment to develop applications for AI-driven tasks. One notable project involved autonomous navigation of the Turtlebot3 in a selected area, incorporating object detection and avoidance, while also mapping the area and ensuring the robot could return to its origin. This project utilized ROS (Noetic) and Gazebo for virtual testing, with key ROS nodes developed in both C++ and Python. Additionally, I managed a CI/CD pipeline for software testing and validation against key performance indicators (KPIs). Data from these operations was efficiently stored, analyzed, and optimized using MySQL. Parallel to my academic pursuits, I worked on the Adaptive AUTOSAR middleware (Service Oriented Architecture) and developed its applications in C++. These Adaptive Applications were deployed on a custom Real Time Linux Operating System using Yocto project. After this, I continued for my Master's thesis, where I was tasked with upgrading a 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 built in different systems like MATLAB, C++ etc. In my Thesis, I also leveraged Google Protocol Buffers 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 where I developed AI-driven applications in Python and managed complex projects in C++ during my thesis, alongside my current role at Persystems refining simulation software with Qt and C++, I am primed to contribute effectively to the Institut für Nukleare Entsorgungs missions. My hands-on experience with real-time Linux systems using Yocto, coupled with my thesis work on software tool upgrades, demonstrates my capability to handle the full software lifecycle, from development through to maintenance, as required by your role. My proficiency in C++, Python, and SQL, gained through practical projects, aligns perfectly with the technical demands of developing advanced simulation models. Additionally, my familiarity with Linux environments, CI/CD pipelines, and development tools like Git, will allow me to swiftly adapt to and contribute to your research infrastructure. My experience in teamwork and project execution at Persystems underlines my readiness to collaborate with your research teams and support the development of innovative nuclear safety solutions.

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
Milind