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Motor Ai GmbH
Pfuelstr. 5
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Software Developer Motion Planning & Control Application

Respected Hiring Team,

I am thrilled to apply for the Software Developer Motion Planning & Control position at Motor Ai GmbH, a company driving the future of autonomous mobility. Your planned deployment of Level 4 autonomous vehicles in German districts in 2025, combined with partnerships like those with Ludwigslust-Parchim for on-demand buses and the German Aerospace Centre for the 2023 Federal Garden Show, showcases your leadership in innovative transport solutions. I am eager to contribute my software development expertise to advance Motor Ais mission of delivering safe, scalable autonomous driving systems for public use.

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, 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 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++.

My experience with Software-in-the-Loop (SiL) co-simulation during my Masters thesis at AVL and my Turtlebot3 navigation project equips me to excel in developing motion planning and control algorithms at Motor Ai. At AVL, I upgraded an FMU Generation Utility from FMI 2.0 to FMI 3.0, enabling SiL co-simulation of vehicle control and motion components using C++ and ASAM OSI standards with Google Protocol Buffers for efficient data serialization. This work, aligned with automotive standards like ISO 26262, directly supports your need for robust motion planning algorithms and subsystem integration in Level 4 autonomy systems. My Turtlebot3 project, where I developed ROS nodes in C++ and Python for path planning and object avoidance, further honed my ability to design algorithms for autonomous navigation, tested in Gazebo and validated through CI/CD pipelines. My expertise in deploying C++ applications on real-time Linux systems with Yocto ensures I can integrate software across platforms, meeting your requirements for scalable system architectures. Additionally, my experience documenting technical results at Persystems and optimizing data with MySQL prepares me to produce clear, compliant documentation for stakeholders, ensuring adherence to standards like the EU AI Act and GDPR.

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