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Flight Software Engineer Application

Dear Hiring Team,

When I read about The Exploration Company's "Mission Possible" capsule launch on June 26, 2025, aboard a SpaceX Falcon 9, I was struck not by its presumed crash into the Pacific Ocean, but by the audacity of its purpose. Carrying 300 kg of payloads, including the Celestis Memorial Spaceflight, this mission embodied a profound commitment to bridging the human experience with the vastness of space. Though the outcome was not as planned, it ignited my admiration for your team's courage to venture into the unknown, transforming a moment of loss into a beacon of inspiration. I am eager to join your mission, bringing my passion for embedded software to fuel the next chapter of Nyx spacecraft innovation.

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 Flight Software Engineer at The Exploration Company GmbH. My extensive experience with C and C++ in embedded systems, demonstrated through firmware development for an STM32-based health monitoring device using I2C, SPI, and UART protocols, aligns seamlessly with your need for robust flight software modules for the Nyx spacecraft. My expertise in real-time Linux systems using Yocto and AUTOSAR middleware, honed at AVL, equips me to develop and deploy reliable software for spacecraft subsystems, ensuring real-time performance and integration with avionics and propulsion teams. My proficiency with CI/CD pipelines, Git, and debuggers like GDB, as applied in my academic and professional projects, ensures I can deliver high-quality, thoroughly tested code to support your high-fidelity spacecraft simulator and integrated testing processes. Moreover, my structured approach to optimizing power consumption and data serialization, combined with my fluency in English, positions me to contribute to The Exploration Company's mission of democratizing space exploration through innovative, reliable software 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,



Regensburg, 27.06.2025