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To:  
Fraunhofer Institute  
Nobelstraße 12, 70569 Stuttgart

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Dear Johannes Kienle,

I am excited to apply for the Software Engineer position for Professional Outdoor Service Robots (Req. Num. 74030) at Fraunhofer. My aspiration is to grow into a software architect, and this role offers a clear path through contributing to the cutting-edge robotics developed by Fraunhofer. Over the past year, I have completed two software projects that demonstrate my ability to design scalable architectures, and I am eager to bring this experience to your robotics ecosystem.

I enhanced the ROS 2 Whisper open-source project by adding live transcription capabilities. This involved restructuring the usage of Whisper.cpp (OpenAI's speech-to-text model in C++) to enable both context preservation and frequent updates. A threaded post-processing node was then added to align and merge the text, resulting in robust performance and efficiency—skills directly applicable to maintaining the reliability of the CURT ecosystem.

I designed a pipeline for deploying multiple Hugging Face models on a live camera feed, mapping model outputs to a unified label framework. The extendable architecture supports on-demand visualization of bounding boxes and pixel masks, as demonstrated by simultaneously running DETR and Maskformer models. This project highlights my ability to integrate complex systems—a core requirement for Fraunhofer's professional service robots.

I am well-prepared to manage Continuous Integration (CI) tasks, drawing on my Computer Engineering background and 10 years of experience using Linux (Ubuntu). My prior roles have provided me with experience collaborating with interdisciplinary teams of engineers and physicists. Additionally, as a second author on a publication in Personalized Robot Navigation, I contributed to advancements in autonomous navigation, including generating simulation-based training data and deploying these systems in real-world scenarios.

Working within the CURT framework presents an exciting opportunity to contribute to the development of innovative robotic systems. I deeply respect Fraunhofer's commitment to applied research and its transformative role in advancing robotics. This position aligns well with my background and aspirations, and I would be honored to bring my skills to your team.

Thank you for considering my application. I look forward to the opportunity to discuss how I can contribute to Fraunhofer's projects.

Best Regards,

Nathan Corral