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To:
Apple
AI and Machine Learning
Aachen, Germany

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Dear Apple Recruiting Team,

My Master's degree in Deep Learning and a recent open-source project in audio transcription make me an excellent candidate for the Machine Learning Research (Speech), DMLI position at Apple ML. With a strong foundation in both research and practical deployment, I am eager to contribute to cutting-edge speech translation technologies.

In my Master's thesis, I introduced a transformer-based deep learning network for the prediction of multiple possible futures. This unsupervised method learns a distribution over potential future states, with applications in areas such as speech translation. This experience, which involved deep learning toolkits and stochastic modeling, provided me with a solid foundation in both theoretical and applied machine learning. The project demonstrated my ability to approach complex problems and develop innovative solutions, as well as to evaluate these solutions against competing methods.

Recently, I extended the open-source project ROS 2 Whisper to perform streaming audio transcription, leading to version 1.4 and earning admin rights to maintain the codebase. Problems in solving a continuous streaming-transcription task, such as mid-word-breaks and loss of context, could be also present in a speech translation system. I addressed challenges such as mid-word breaks and loss of context using a ring-buffer to hold audio data, performing transcription in regular intervals, and aligning updates with the existing text using a substring matching algorithm. Implemented in modern C++ with multithreading and design patterns (at different parts; composition, inheritance, and templates), my solution was efficient and scalable. While deployed on an NVIDIA Jetson Orin, it used Whisper CPP, designed for Apple silicon, showcasing my commitment to real-world deployment and experience with speech recognition technologies.

These experiences, spanning research and engineering, have equipped me to contribute to developing state-of-the-art machine translation solutions at Apple. I am eager to collaborate with your talented team to advance the field and tackle real-world challenges.

Thank you for considering my application. I look forward to discussing how I can contribute to the future of speech translation at Apple.

Best Regards,

Nathan B. Corral