



To Whom It May Concern

It is with great enthusiasm that I write this letter recommending Mr. Aryan Singh for graduate studies and a research position. As the Head of the Department of PCSVD, SAC, ISRO, I had the privilege of supervising Aryan for three and a half months. During this period, he consistently demonstrated exceptional technical expertise, creativity, and dedication, particularly through his work on an innovative project titled "Development of Wake Word Detection Model for Voice Commanding System. "Aryan's project aimed to design a voice-activated system capable of detecting a specific wake word to trigger commands.

In executing this project, Aryan demonstrated a wide range of technical skills. A standout aspect of his work was the extraction of Mel-Frequency Cepstral Coefficients (MFCC) as features, which he paired with a Convolutional Neural Network (CNN) to perform binary classification of the wake word. To address the challenge of a small dataset, he creatively applied data augmentation techniques, such as adding white noise and time shifting, to enhance model robustness. The result was a highly efficient solution that outperformed the initial Vosk approach in both accuracy and performance, even on resource-constrained hardware. In addition to his technical prowess, Aryan exhibited excellent collaboration skills, engaging effectively with peers and mentors to refine ideas and ensure project success. His willingness to share insights and learn from others made him a valued contributor to our team.

Beyond his technical abilities, Aryan displayed remarkable soft skills that set him apart. His problem-solving mind-set was evident when addressing inefficiencies in the ML model, and his perseverance ensured steady progress despite setbacks. He worked independently, conducting thorough testing and refinement to achieve a functional real-time detection system. Aryan's professionalism, integrity, and resilience in the face of challenges further distinguished him as an exceptional candidate. These qualities, combined with his intellectual curiosity, make him an outstanding candidate for advanced studies in AI/ML.

In summary, I recommend Aryan Singh without reservation. His work on this project is a clear indicator of his potential to excel and contribute meaningfully to any academic or professional setting. I am confident that Aryan's blend of technical expertise, intellectual curiosity, and dedication will position him to make significant contributions to the field of AI/ML, whether in academia or industry.

Please feel free to contact me if you require additional information.

Sincerely,

Shri Amit B Dave

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