

To whom this may concern,

I am writing this letter on behalf of *Vishal Radhakrishnan*. I acted as a supervisor for Vishal's fourth year engineering Capstone Project at the University of Toronto from September 2023 to May 2024. Vishal performed excellently on this challenging multidisciplinary project, and I can enthusiastically recommend him for the Mechatronics Engineer position at your organization.

Vishal's capstone project was to design and develop a dynamic medical lung phantom to aid in radiation treatment planning. This biomedical engineering project combined aspects of mechatronics, mechanics, and materials science and he did very well to understand the technical complexities required of the system. The capstone team developed a servo motor driven Stewart Platform with 6 - Degrees of Freedom to replicate the 3D motion of a lung tumor based on breathing patterns.

Vishal led the circuit design, Arduino programming, and the power management of six synchronously moving servo motors, which drive the platform's motion. He developed MATLAB and Arduino code to ensure seamless communication of motion commands from the software to the Stewart Platform. The team also developed a MATLAB application that provides the user with an interface to input the motion parameters or a respiratory waveform file and implements inverse kinematics to compute the required motor angles to generate the desired tumor trajectory.

He demonstrated exceptional skills at these tasks including extensive troubleshooting and optimization through extensive individual research. Additionally, Vishal acted with a high degree of professionalism with his teammates and in meetings with the external client.

Vishal would make a great asset to your team, please feel free to reach out with any further questions.

With regards,

Adam Pearson, PhD

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Research Fellow / Lab Manager

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