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Dear Member of Faculty,

I'm currently an undergraduate student at the University of Toronto, majoring in computer science and economics. I'm also an aspiring computer science researcher, with an interest in artificial intelligence, and I'd love to take part in your research during the coming fall.

Last summer, I worked at the ReStore lab to provide statistical support. This gave me the opportunity to develop skills in data analysis by means of working with experimental data. This included performing regressions, ANOVA and t-tests using R. I summarised my findings in reports through the use of summary statistics and visualisations, and presented them orally during meetings. I've also performed data extractions, where I developed abilities to interpret and identify key findings in existing literature.

I've also worked as an RA for professor Tianyi Wang in the Department of Economics since last May. Here, I've learned how to use text embeddings from OpenAI and Cohere to identify political bias in movies. I've gone through the processes of cleaning data, creating visualisations, optimising models and summarising my findings. I also learned how to construct web-scrapers to gather historical concert and band data.

Last September, I took on a research assistant position under Laurent Cavenaille at the Rotman School of Management. Here, I've been working on a project that analyses business data such as royalty agreements, patent filings and M&A cases to derive insights and guide further research. This includes measuring firm similarities, detecting obsolete products, and identifying cases of trademark infringement. I was able to gain experience with literature reviews, developing and implementing mathematical models, and utilizing specialized software and hardware to perform computations over large datasets.

Most recently, I've taken on an RA position at the Far Data Lab. Here, I've been exploring preprocessing pipelines for federated learning, with a focus on video and image data. We're currently working on a project that seeks to evaluate the efficiency and computational costs associated with frame sampling and video duplicate detection models, and how they could be incorporated into a preprocessing framework for federated environments. Through this position, I've been able to gain experience with state of the art machine learning models, explore their trade-offs, and empirically evaluate them through experimentation over large datasets.

I aspire to obtain a PhD in computer science, and eventually become a full time researcher. Through this opportunity, I will be able to gain the experience needed to strive towards that goal.

Best,
Armaan Nanji