DIVERSITY STATEMENT

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Computer science and engineering are disciplines of study that see low gender, ethnic, and cultural diversity. From data available on Statistics Canada, in 2020-2021, 16% of all undergraduate degrees in computer engineering in Canada were awarded to women [1] and 4% of all STEM-based undergraduate degrees in Canada were awarded to Black Canadians and other visible minorities [2]. This diversity gap is also reflected at the graduate level where 26% of graduate degrees in computer engineering were awarded to women in 2020-2021 [1]. The low representation of indigenous Canadians compared to non-indigenous Canadians in these fields further contributes to the diversity gap. In 2021, only 13% of all indigenous Canadians received an undergraduate degree with 4.7% of these degrees in mathematics and computer science/engineering [3]. On the other hand, 34% of all non-indigenous Canadians received an undergraduate degree with 11% of the degrees in mathematics and computer science/engineering [3]. This diversity gap discourages deserving individuals from pursuing careers in these fields due to lack of gender and ethnicity representation, unfair treatment and unequal access to opportunities, and the lack of an inclusive environment where individuals from diverse and minority backgrounds feel welcome and empowered to pursue and collaborate on their interests. Innovations and progress in these disciplines are crucial to sustain the current machine learning revolution and unlock solutions to address major societal challenges across the world. However, this diversity gap runs the risk of robbing these disciplines of prospective diverse engineering professionals with unique perspectives and problem solving skills. As a prospective faculty member and a *person of color*, I am committed to addressing the diversity gap through my teaching and research activities, and contribute to guiding and producing diverse and technically competent engineering professionals. Below, I list my vision for student recruitment, advising, and teaching that are based on the principles of equity, diversity, and inclusion (EDI).

Student Recruitment Based on EDI Principles

As a prospective faculty member, I will work towards building a *gender and culturally diverse research group*. To achieve this, I will engage with university groups and initiatives focusing on addressing EDI, participate in their events around technology, training, and mentoring, and advertise openings in my research group. In addition to university initiatives, I also look forward to participating in EDI initiatives and events organized by technical conferences and symposiums in my field of research and expertise. This means attending conferences to not only present research results from my research group but also to network, advertise, mentor, and grow my knowledge on techniques and practices for improving EDI. For example, Women in Engineering, Forum on Advancing Diversity in EDA, and Meet-a-Senior-Architect events are yearly EDI events that take place at conferences such as DATE, DAC, ISCA, and MICRO which are premier technical conferences in my research areas. I also look forward to participating in summits and networking events at the intersection of technology and the indigenous community such as ZGAABII [4], Indigenous Technology Summit [5], Technology + Indigenous development summit [6], and Centre for Indigenous Innovation and Technology (CIIT) [7]. These summits and events will help me network with members of the indigenous community, understand and grow my knowledge on the indigenous community's technological challenges, and discuss and share my research areas and interests with the community. Through these activities, I hope to contribute to the university's vision and commitment to EDI principles, and in the process, become a *staunch, reliable, and active ally to minorities and underrepresented groups in the area of technology and mentoring*.

Teaching and Advising Approaches Based on EDI Principles

My teaching and advising approaches put student training, well-being, and their all-round development at the forefront. I am committed to creating a safe and inclusive environment where students from diverse background feel encouraged to discuss their concerns, observations, and research ideas with me. To achieve this, I will focus on three concrete approaches.

The first approach focuses on teaching introductory courses in computer science and engineering. These courses are typically large class sections that comprise of students from diverse backgrounds. The knowledge gained in these courses is crucial as they lay the foundation for advanced upper-year courses. As a result, students' learning experiences in these introductory courses are key to *retention in the program and nurture further interest in advanced computer engineering and science courses*. As a potential faculty member, I will work towards creating an inclusive learning environment for introductory courses in my area of expertise. This means devoting time and energy to ensure that I am available to students and students from diverse backgrounds feel empowered to discuss their doubts and questions on the course content. I also acknowledge that there is no single best teaching style and that students from different backgrounds may benefit from different teaching approaches and styles. To address this, I will make myself available to students facing difficulties and require extra help with course content in the form of extended office hours. Furthermore, I will explore options in consultation with the department to record videos of lectures, and make these videos available to students for their reference and viewing.

The <u>second approach</u> focuses on upper-level and graduate courses on advanced topics in computer engineering and science. The learning experience in these courses will influence students' decisions towards *pursuing careers and graduate studies (masters/PhD) in computer engineering and sciences.* This learning experience encompasses both course content and initiatives that encourage students from underrepresented backgrounds to pursue careers and graduate studies in these fields. Examples of initiatives include talks by industry professionals and researchers from diverse backgrounds and discussions on research papers authored by researchers from under-represented backgrounds. As a potential faculty member, I will work towards reaching out to my industry and research professional networks to realize these initiatives.

The <u>third approach</u> focuses on advising graduate students on EDI principles. During my time at UWaterloo, I was fortunate to co-mentor two graduate students with my PhD advisor on their graduate thesis. *Both graduate students came from diverse backgrounds that are under-represented in my research community.* I worked closely with both students on their graduate thesis, and both students published research papers based on their graduate thesis at top-tier conferences as first authors. A key takeaway from this co-mentoring experience was that that students from different backgrounds benefit from different mentoring styles and have different motivations that drive them to do well and succeed. These differences stems from differences in culture, prior exposure, and perspectives. As a *third-culture individual*, I have been fortunate to experience several different cultures during my childhood and early adolescence. These experiences have helped me expand my world-view perspective, sensitivity to other cultures and philosophies, and competency in establishing and building good relationships with individuals from different cultural backgrounds. I believe these experiences will assist me in my interactions with graduate students from diverse backgrounds, and help me create a comfortable environment for my graduate students to pursue and collaborate on their research interests.

In summary, sustaining the innovation momentum in computer engineering and sciences to bring about meaningful impact to our daily lives and society requires a steady pipeline of technically competent and diverse engineering professionals and researchers. A gender and culturally diverse collection of engineers accelerates innovation, brings unique perspectives to challenges and their solutions, and makes technology accessible to everyone. As a prospective faculty member, I am excited about the opportunity to participate and contribute to a future where deserving and passionate individuals are empowered to pursue their careers in computer engineering and sciences without any barriers and discrimination, and chart fulfilling career trajectories that benefit their lives and in the process, the lives of others.

References

[1] Statistics Canada. Postsecondary enrolments, by detailed field of study, institution, and program and student characteristics. 2022.

[2] Statistics Canada. Canadian undergraduate degree students belonging to a visible minority group, by field of study. 2023.

[3] Statistics Canada. Postsecondary educational attainment and labour market outcomes among Indigenous peoples in Canada, findings from the 2021 Census. 2023.

[4] ZGAABII, 2023. https://technationcanada.ca/en/future-workforce-development/career-ready-program/zgaabii/.

[5] Indigenous Technology Summit, 2022. https://www.apcfnc.ca/governance/conference/tech/2022.

[6] TECHNOLOGY + INDIGENOUS DEVELOPMENT SUMMIT, 2023. https://www.tidsummit.ca/.

[7] Center for Indigenous Innovation and Technology, 2023. https://ciit.io/initiatives/.