JOHNS HOPKINS
WHITING SCHOOL
of ENGINEERING

Cover Letter

January 18, 2026

Faculty Search Committee,
Department of Electrical and Computer Engineering
McGill University

Dear Members of Search Committee,

It is with great enthusiasm that I apply for the Tenure-track Assistant Professor position in the Department of Electrical and Computer Engineering at the McGill University. I am currently a Malone Postdoctoral Fellow at Johns Hopkins University, where my work focuses on **human-AI collaboration**, **responsible and trustworthy AI** and **human aspects of software engineering**. With a background in Human-Computer Interaction (HCI), Natural Language Processing (NLP), and Software Engineering, my work focuses on designing AI systems that support human cognitive capabilities in data analysis, such as sensemaking, reasoning, and reflection, to enhance efficiency, trust, agency, and equitable participation.

I believe I am a strong candidate for this position because my research vision aligns closely with Department of Electrical and Computer Engineering's searching focus in **Software Engineering**. Having worked in *human-AI collaboration* area since 2021, my work is one of the most original contributions in recent years, opening a new research direction and inspiring a growing body of follow-up work. Below, I present my core strengths across three dimensions.

(1) My work on human–AI collaboration and trustworthy AI in enhancing "Qualitative Data Analysis" methodology has strong potential to address fundamental societal challenges across healthcare, social science, public policy, and psychology. For example, social media posts, customer reviews, and clinical interviews often contain rich signals that can inform policy-making and business decision-making. Yet, extracting insights from such unstructured qualitative data remains difficult due to its scale, complexity, nuance, and lack of structure. This motivates my central research motivation: **designing AI systems that can analyze complex unstructured data while maintaining human-level quality.** My projects, CoAIcoder (TOCHI 2023), CollabCoder (CHI 2024), and MindCoder (2025), develop AI systems that support efficient, transparent, and trustworthy human-centric analytic workflows. **Two of these systems, CollabCoder and MindCoder.ai, have been publicly released as open-source or publicly deployed tool to support real-world use.** As some of the earliest investigations in this space, my CHI and TOCHI publications have been well cited and influential in our domain, inspiring a growing body of follow-up research on human-centered AI for qualitative and interpretive work. Looking ahead, I am committed to advancing cross-disciplinary, high-impact research by **designing next-generation human–AI collaboration systems that support scalable and trustworthy analysis**. In addition, I plan to build evaluation frameworks for human–AI systems, especially those involving large language models, to guide the development of reliable and trustworthy AI technologies.

(2) My capability to generalize research beyond disciplinary boundaries. My unique HCI perspective enables me to bridge social science methodologies with technical problem spaces and develop innovative solutions to complex socio-technical challenges. **For example, one of my recent projects**

brings a unique HCI perspective to Software Engineering. "Understanding Codebase Like a Professional!" explores how expert developers' code-understanding behaviors can inform the design of AI-powered tools for codebase comprehension, thereby supporting novice developers. In another example, my mentored student's position paper: Enriching Subjective Data Annotation through Qualitative Analysis generalize social science research methods for application in subjective data annotation in SE and NLP domain. Together, these works demonstrate that my research is generalizable across disciplines in both its methodology and underlying mindset, indicating strong potential for broad impact.

(3) Strong record of my professional connections, academic service, and teaching and mentoring. Globally, I have built professional connections with researchers across countries and institutions, such as MIT, Singapore–MIT Alliance for Research and Technology (SMART), University of Notre Dame, National University of Singapore (NUS), Singapore Management University (SMU), The Pennsylvania State University, and North Carolina State University. My previous role at SMART, which also gave me first hand experience collaborating with industry partners such as Singapore Changi Airport and Synergy Marine Group, further equipped me with the ability to translate research into industry relevant problems. **Within McGill University, I am interested in the work of Gunter Mussbacher, Lili Wei, Narges Armanfard and Jeremy Cooperstock, and I hope to explore further collaboration opportunities with them.** Apart from collaboration, I am also consistently committed to academic service, including reviewing more than 80 papers and serving four times as an associate chair for top-tier conferences (CHI 2025–2026 for the main track and CHI 2022–2023 for the Late-Breaking Work). Moreover, I have a strong record of mentoring more than 10 students across diverse backgrounds and career stages.

Thank you for considering my application. I am confident that I can contribute to Department of Electrical and Computer Engineering's future growth by conducting high-impact research in human-AI collaboration and trustworthy AI, and pursuing competitive funding opportunities. I would also be honored to discuss how my research and teaching align with McGill University's mission.

Sincerely yours,

Jie Gao

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