Job Description

Computer Vision for Smart Structure Laboratory (https://cviss.net) in Civil and Environment Engineering at the University of Waterloo, led by Dr. Chul Min Yeum, is accepting applications for graduate study (MASc, Direct Ph.D., Ph.D.). Graduate students will engage in research driven by practical applications, harnessing state-of-the-art technologies to infuse intelligence into the physical built environment. This endeavor aims to enhance the safety and resilience of infrastructure, ensuring its ability to withstand and adapt to challenges. A primary research goal for these positions involves the design, optimization, and implementation of Large Language Models (LLMs) and Generative AI. These technologies will be utilized to develop sophisticated search and recommendation systems, as well as question-answering platforms specifically tailored for civil engineering. Additionally, the exploration of these technologies to generate robot-control code will be a part of the research, among other applications. Students will collaborate with a multidisciplinary team of engineers and researchers to deliver cutting-edge solutions that drive innovation in our field.

Qualification

Requirements

- An undergraduate, MASc, or Ph.D. degree in Civil Engineering, Computer Science, Software Engineering, or System Engineering.
- Extensive experience with Python and familiarity with key AI/ML libraries and frameworks, such as TensorFlow, PyTorch, and Hugging Face Transformers.
- Expertise in working with generative AI and LLM models, including but not limited to architectures like GPT, BERT, or similar.
- Strong machine learning development skills (TensorFlow, Keras, Pytorch, Lightning).
- Proficiency in English, both spoken and written, to communicate daily.

Preferred qualifications

- Experience with Retrieval-Augmented Generation (RAG) models and fine-tuning AI models for specific tasks or datasets.
- Skilled at processing and analyzing large datasets, proficient in SQL, pandas, NumPy, Matplotlib, and Seaborn for data manipulation and visualization.
- Experience with frontend technologies (e.g., HTML, CSS, JavaScript, React, Angular) and backend systems (e.g., Node.js, Django, Flask, databases) to develop full-stack applications.

Duties and responsibilities

- Coordinating research projects and delivering outputs.
- Disseminating results through scientific publications and conference presentations.
- Communicating and working with industries and stakeholders in government.
- Participating in research proposal drafting and project deliverables.

Application

All qualified individuals are encouraged to apply for this position. The candidates should send a detailed CV to Dr. Yeum (**cmyeum@uwaterloo.ca**) with the email subject "Position Application". Before applying to the position, please review the current research in our lab (**https://cviss.net**). Dr. Yeum may ask for additional information from the candidates. Dr. Yeum will review the applications and contact candidates who meet the criteria to arrange interviews. If you do not hear from us, it means your application did not progress to the interview stage. Selected candidates will have the opportunity to start the program in Fall 2024 or Winter 2025. If you are passionate about applying the newest computer vision technologies to solve impactful civil engineering problems and want the opportunity to collaborate with leading industry partners, apply to our lab today!

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