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📍 Toronto, ON

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Professor Marsha Chechik  
University of Toronto

Dear Professor Marsha Chechik,

I am writing to express my interest in the 2026 Summer NSERC USRA / UTEA research project *“From Crash Reports to Simulation Scenarios for Testing Self-Driving Cars.”* I am an Honours Bachelor of Science student specializing in Computer Science and Data Science at the University of Toronto, with a strong academic interest in autonomous systems, software engineering, and data-driven analysis.

My coursework and projects have focused on transforming unstructured, real-world data into structured representations suitable for analysis and modeling. In an Urban Metro Review Analysis project, I designed SQL pipelines to join and aggregate multi-table datasets and applied Python-based analysis and visualization to extract meaningful patterns from text-heavy data. In a separate study on social and emotional factors affecting mental well-being, I used data cleaning, hypothesis testing, and regression models to convert survey responses into interpretable statistical results. These experiences parallel the core challenge of this project: bridging natural-language descriptions and executable representations.

I am particularly interested in research on self-driving technologies, especially the use of AI-driven methods to improve safety assurance and system validation. The increasing role of large language models in extracting structure from natural language aligns closely with my experience using LLM-based techniques to organize and classify free-text data. While I have not yet worked directly with traffic simulators such as CARLA or BeamNG, I have experience designing systems with explicit constraints, correctness requirements, and iterative refinement—skills that I am eager to extend to scenario generation and simulation for autonomous driving.

In addition to technical preparation, I bring strong collaboration and communication skills developed through leading small project teams and presenting technical results to diverse audiences. I am motivated by research that combines rigorous methodology with real-world impact, and I would be excited to contribute to work that advances the safety and reliability of autonomous systems.

Thank you for considering my application. I would welcome the opportunity to contribute to your research group and to further develop my research skills under your supervision.

Sincerely,  
Xiaoshuai (Samario) Liu