

Licheng Zheng

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EDUCATION

University of Toronto, Scarborough September 2025 - Present
Honors Bachelor of Science, Computer Science Co-op

RELEVANT EXPERIENCE

University of Toronto Aerospace Team, Data Processing Team September 2024 - Present
Data Processing Team Member

- Developed 3D geospatial visualizations of wavelength intensities using Matplotlib and Plotly for terrain aberration analysis.
- Implemented algorithms that simulate satellite imagery aberrations to generate datasets for model training.

STEM Camp, Newmarket Summer 2026
Program Coordinator

- Planned schedules for 8 other counselors for science related activities for over 30 campers.

PROJECTS

Compoxel N-Body Gravity Engine June 2026 – July 2026

- Engineered a massively parallel N-body gravity simulation engine built in C++ and CUDA, optimized for SIMT architectures to simulate over 10 million entities entirely in VRAM.
- Created a custom Hybrid TreePM (Tree Particle-Mesh) algorithm that dynamically changes algorithms based on density, reducing the bottlenecks of cache thrashing.
- Distributed rendering across 10x NVIDIA T4 GPUs using headless Blender via the Modal serverless cloud API.

Timmy & Tommy Agentic RAG Engine March 2026 – June 2026

- Engineered retrieval-augmented generation (RAG) pipeline utilizing QDrant for Hierarchical Navigable Small World (HNSW) graph traversal for fast retrieval of information.
- Implemented and integrated custom Recurrent Neural Networks (RNNs) to determine user profile and semantic intent within a 64-dimensional latent space.

Airfoil Optimizer July 2025 – February 2026

- Engineered a scalable airfoil optimizer that uses local and cloud parallelization across CPU cores.
- Integrated evaluation neural networks into the pipeline and enabled direct exporting of optimized wing geometry for 3D printing, machining and third party evaluation.

PUBLICATIONS

Metadata-Conditioned Dark-Frame Modelling and HSDR-ScanFusion Denoising... June 2026
Fourth Author | 40th Annual Small Satellite Conference, Utah

- Helped improve synthetic full-cube peak signal-to-noise ratio (PSNR) by 19.3 dB and reduced spectral angle by 8.32 degrees by generating synthetic data to test model performance.

SKILLS

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- **Languages and Tools:** Python (PyTorch, Tensorflow, Keras, Matplotlib, Plotly), C++ (Pybind11), Git, Modal, SQL, C, C#, Google Colab, Hugging Face, CUDA
 - **Core Concepts:** Neural Networks, Genetic Optimization, Parallelization, Blender Nodes, Data Processing