Shenzhe (Cho) Zhu

7 Mirrow Court, Scarborough, ON, M1C 4Y7
+1 437-849-4752 | cho.zhu@mail.utoronto.ca | linkedin.com/in/shenzhezhu0531/ github.com/FywOo02

Education

University of Toronto — Toronto, Canada
Bachelor of Science in Computer Science — *Sept 2022 - Current*

- Cumulative GPA: 3.97/4.0
- Honors&Awards: 2022-2023 Dean's List
- Relevant Coursework/Certificates: Linear Algebra I&II, Multi-variable calculus, Introduction to Probability, Systems Programming, Introduction to Linguistics I&II, Introduction to TensorFlow(Coursera), Finetuning LLMs(Coursera)

Research Experience

SocialAI Lab, University of Toronto — Toronto, Canada
Research Assistant, Advisor: Prof. William Cunningham — *May 2024 - Current*

- **Social Cognitive Criteria Benchmark based on Minagen**
  - Scheduled
- **Minagen: A Minimal Testing Ground for Building Cognitive Architectures for Generative Agents**
  - Engineered cognitive and environmental simulation component to bridge the upstream **Ollama** based language model framework, with downstream cognitive architecture construction, enhancing the overall functionality and interoperability of the Minagen platform.
  - Conducted experiments on Social Cognitive Criteria to establish algorithmic fidelity and effectiveness in building cognitive architectures.

CoNSens Lab, University of Toronto — Toronto, Canada
Research Assistant, Advisor: Prof. Matthias Niemeier — *May 2024 - Current*

- **Layer-dependent Feedback in a Grasping Neural Network Increases Robustness to Noise (Beginning Stage)**
  - Construct the neural architecture with integrated feedback loops not trained on predictive tasks.
  - Implement training with a loss function that combines task-specific optimization and sparsity.
  - Evaluate emergent properties using tools like **Grad-CAM** to study predictive coding and attention and make a single output focus.

Department of Computer Science, University of Toronto — Toronto, Canada
Machine Learning Researcher, Advisor: Prof. Xujie Si — *Dec 2023 - Current*

- **Exploring knowledge graph-based neural-symbolic system from application perspective**
  - Crafted a survey paper as first author with analyzing **140+** papers on neural symbolic systems and deep learning interpretability.
  - Presented findings to the research group, initiating discussion on future of knowledge graph-based neural-symbolic systems.

Work Experience

Urban Data Research Centre, University of Toronto School of Cities — Toronto, Canada
NLP Analyst — *May 2024 - Current*

- **SMILE: Semantic Role Extraction**
  - Refined SPARQL-based **ontology** of social service impact models through developing advanced semantic entity extraction techniques, improving the match between social purpose organizations and client needs.
  - Developed corpus of over **800** organizations and their impact models, trained domain-specific language models (e.g., **RoBERTa**) to enhance the accuracy of extracting impact models from unstructured text.
  - Recognized uncertainty in generated results and calculated the degree of belief in the correctness of answers.

University of Toronto Scarborough — Toronto, Canada
Data Analyst Intern — *Jan 2024 - May 2024*

- **CareerNavigator: LLM & Knowledge Graph-Based Job Recommender Engine**
  - Developed a Flask-based job recommender system for co-op students, enhancing job matching and employment opportunities.
  - Shifted from NLP text extraction to leveraging **Gemini-Pro** for prompt engineering, boosting keyword extraction accuracy by **60%**.
  - Utilized Neo4j Aura to construct a job-related knowledge graph for job matching with graph search and node similarity algorithms.
- **Weekly Report Data Generation System Reconstruction Project**
  - Reverse-engineered **1000+** lines of Python scripts used for weekly report data generation to decode complex data manipulation processes.
  - Designed SQL-based data generation logic with UML and crafted **600+** queries for MySQL to the foundation of automated reporting.

Publication & Selected Papers

Zhu, S. (2024). Exploring knowledge graph-based neural-symbolic system from application perspective. arXiv preprint arXiv:2405.03524.

Competition

GenAI Genesis 2024 | **InterView** (Award for Best AI in Safety & Responsible) **(Work Link)** — Mar 2024

- Designed and optimized the **Speech-to-Text** model using Node.js, and Constructed vector databases for **Retriever-Augmented Generation (RAG)** training in Gemini.

HacktheValley8 | **QuickScan: Text-Scanner (Work Link)** — Oct 2023

- Created a system with OpenCV for precise image segmentation, extracting handwritten text from photos. Enhanced recognition accuracy by implementing a CNN and LSTM based deep learning model.

Skills

Languages: Python, SQL, SPARQL, Java, C, Bash, Cypher, Node.js
Machine Learning Frameworks: Pytorch, Tensorflow, Keras, spaCy, Scikit-learn, XGBoost, Matplotlib, OpenCV
LLM Frameworks: Hugging Face, Langchain, Ollama
Cloud Tools: AWS, Google Cloud, FireBase, Neo4j AuraDB
Development Tools: Git, MySQL, CUDA, Unix/Shell, Tableau, PowerBI, Markdown, Latex, Github, Jupyter Notebook, Anaconda