SARA PARVARESH RIZI

+14377722160 | s.parvareshrizi@mail.utoronto.ca | LinkedIn | Github | Website

Summary

Aspiring Data Engineer with experience in research and data analysis, currently serving as a Research Assistant at NeurAITex. Demonstrated ability to improve AI model accuracy for medical imaging and conduct comprehensive literature reviews. Eager to leverage analytical skills and research experience to drive data-driven solutions and innovation in consulting environments.

Work Experience

AI in Medical Imaging Research **May 2025 - Present**
Research Assistant w/ Niloufar Delfan *Remote*
- Compared previous AI models' performance against newer ones to identify the best model for detecting discrepancies in medical imaging, improving accuracy in glaucoma detection (see Github)
- Conducted research into previous works to construct literature reviews for future projects, providing a solid foundation for ongoing research initiatives
- Assisted PhDs by editing academic writing and code, which improved the clarity and functionality of research outputs and facilitated smoother project progress

Guided Engineering Academic Review Sessions (GEARS) **Sep 2025 - Present**
Academic Tutor *University of Toronto*
- Guided weekly tutoring sessions for ~20 firstyear Engineering Science students, using interactive problemsolving, Python notebooks, and projectmanagement tools to clarify core concepts, which helped raise average exam scores and increased student confidence
- Taught first-year engineering physics, calculus, linear algebra, chemistry, and mechanics, improving students' grasp of complex concepts and boosting their academic confidence

Canadian Undergraduate Conference in AI (CUCAI) **May 2025 - Present**
Marketing Director
- Developed and implemented a marketing strategy for the 2025–2026 season using associationmarketing techniques and analytical skills, targeting 350+ delegates, 25+ universities, and 20+ sponsors, which increased engagement and attracted additional sponsorship interest
- Built a content calendar in Excel and coordinated with product designers to deliver assets across email, social media, and Discord on schedule, which improved communication efficiency
- Collaborated with the External Relations and Logistics teams to distribute conference information via Discord, our primary hub for delegate communications, which improved information dissemination and delegate engagement

Green Technology Laboratory **May 2025 - Present**
Undergraduate Researcher *University of Toronto*
- Conducted research on photothermal water purification using wood biochar monoliths, leading to improved methods for sustainable, solar-driven desalination techniques
- Participated in the Undergraduate Student Research Program (USRP) and presented findings at the University of Toronto Undergraduate Engineering Research Day, winning best podium in Chemical and Materials Engineering.
- Performed material synthesis, spectroscopic analysis (FTIR, UVVis) and data interpretation using Microsoft Excel, which confirmed the feasibility of the biochar approach and contributed to the development of greener watertreatment technologies

Engineering Science Education Conference **May 2025 - Present**
Director of Communications *University of Toronto*
- Led a team of Engineering Science students to plan and execute ESEC 2026, attracting 300+ attendees and 8 industry-leading speakers, enhancing the conference's reputation
- Ensured the conference delivered insightful programming on emerging technologies, innovative research, and evolving career landscapes, leading to positive feedback from attendees

Young Scientists Journal **Dec 2023 - Present**
Production Staff *UK*
- Organized production processes, ensuring timely publication across 50+ countries, which improved global reach and readership for 1.5+ million readers
- Analyzed production metrics with Excel and statistical methods to pinpoint bottlenecks, then implemented process changes that increased efficiency and improved output quality
- Allocated resources and coordinated schedules with the team, met all deadlines while preserving scientific accuracy, which boosted overall team performance

University of Toronto Machine Intelligence Student Team (UTMIST) **Sep 2024 - Present**
First Year Intern *University of Toronto*
- Led marketing initiatives for UofT's ML club, engaging members across 8 departments and 24+ design teams, which increased event attendance and cross-departmental projects

- Collaborated with UTMIST's executive team, applying research and communication skills to support machinelearning projects, organize events, and run outreach campaigns, which increased active participation across the 2,200plus member AI/ML community

Projects

LabPath Corti-Call Watch Proposal | Link to Proposal **Jul 2025 - Jul 2025**

LabPath

- This device, in conjunction with a mobile app, uses various AI algorithms, including the latent-based food recommendation system and the RL-PPO algorithm for drug scheduling. We performed extensive research in areas of metabolism, circadian rhythm and regeneration in the endocrine system, and integrated engineering knowledge into the field of healthcare.
- Propose a cortisol-monitoring watch called "Corti-Call" for individuals with Addison's Disease. The watch utilizes a gold nanoparticle (AuNP)- functionalized laser-induced graphene interdigitated electrode (LIG-IDE) and electrochemical impedance spectroscopy (EIS) to detect cortisol from a range of 0.1 pm to 100 nm in synthetic human sweat, enabling real-time health updates about their health and wellbeing.
- **Skills:** Biosensor Development, Reinforcement Learning (RL-PPO), Latent-Factor-Based Models (LUFM), Predictive Analytics, Analog-to-Digital Conversion (AD5933 chip), Frequency Resonance Analysis (FRA), Wearable Device Architecture, Mobile UI/UX Design (Figma/Prototyping).

Cadence AI | Link to GitHub **Oct 2025 - Oct 2025**

Higgs Boson AI Hackathon

- Developed a full-stack web application that translates song lyrics across languages with real-time karaoke functionality.
- Built and integrated backend systems using Node.js (Express) and Python (FastAPI) for audio processing and AI model communication, with Boson AI audio recognition and LLM models.
- Designed frontend-backend integration between React (Vite/Tailwind) and API endpoints, for audio separation, translation, and real-time lyric synchronization features.
- **Skills:** Python, JavaScript (ES6+), HTML5, CSS3, React.js, Vite, TailwindCSS, Responsive Design, Node.js, Express, FastAPI (Python), RESTful APIs, Large Language Model (LLM) Integration, Speech-to-Text (STT), Text-to-Speech (TTS), Audio Understanding Models, FFmpeg (Audio Processing), Virtual Environments (venv), NPM/Node Package Management

Forecasting Glioblastoma Tumour Growth with Neural and Stochastic DEs | Link to Paper **Sep 2025 - Dec 2025**

University of Toronto

- Engineered a time-dependent Stochastic Differential Equation (SDE) using a modified Gompertz framework to simulate tumor proliferation and chemotherapy decay.
- Developed a HybridStateODE that combined Markov transition matrices with continuous dynamics to predict disease stage progression.
- Implemented and benchmarked Milstein, SRK, and Euler-Maruyama solvers using Monte Carlo simulations to quantify biological uncertainty.
- Automated volumetric extraction from the LUMIERE MRI dataset using the hd-glio-auto (U-Net) segmentation framework.
- **Skills:** Python (NumPy, SciPy, Matplotlib), Neural ODEs, PyTorch (torchsde), Stochastic Calculus, Ordinary/Partial Differential Equations, Markov Chains, Numerical Analysis, Git/GitHub, LaTeX, Medical Image Segmentation (U-Net)

Education

University of Toronto **Sep 2024 - Jun 2029**

Bachelor of Engineering - BE, Engineering Science + PEY Co-op

- **GPA:** 4.0
- **Achievements:** Fessedon-Trott Scolarship, Dean's Merit Award, Dean's List
- **Coursework:** C, Python, VHDL, System Verilog

William Lyon Mackenzie Collegiate Institute **Sep 2020 - Jun 2024**

High School Diploma

- **GPA:** 4.0
- **Achievements:** Jim McQueen Excellence in Education Award, UofT National Book Award, Liberal Arts Award, President of School Paper, President of Mock Trials, Arts Council Chair, Science Club Event Designer

Skills

- Association Marketing, Analytical Skills, Organization Skills, Communication, Teaching, Event Planning, Research, Design, Project Management, CAD, Python, PyTorch, JavaScript, C, Assembly, System Verilog, Figma, Microsoft Suite

Certifications

- Standard First Aid CPR-C
- MATLAB