

Elili Marakathalingasivam

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EDUCATION

BASc in Systems Design Engineering

University of Waterloo (Cumulative Average 90.7%)

Waterloo, ON

Sept 2023 - June 2028

SKILLS

Languages: Java, Python, C++, C#, HTML, CSS, Javascript, Typescript, LaTeX

Relevant Courses: Digital Computation, Data Structures and Algorithms, Human Factors in Design, 3D VR/AR (HS)

Other: React.js, React Native, Node.js, TensorFlow, Unity 3D, Git, Bitbucket, Arduino, PyTorch, Streamlit, Maya

PROJECTS

Real World Design Challenge | 1st in Canada, 3rd Internationally

- Engineered a dual-rotor autonomous delivery drone with a 5kg payload using underactuated rotor motion.
- Led the team as Project Manager by organizing tasks with Gantt charts, using algorithmic problem-solving to break up the large problem, and developed a plan that re-motivated the team during ideation challenges.
- As Lead Physicist, performed detailed drone calculations (thrust-to-weight ratio, drag analysis, among others), validated by aerospace engineers to ensure design feasibility, contributing to an 80-page technical report.

EMGirls Worldwide Entrepreneurial Competition | 1st Internationally

- Proposed a fridge-tracking app with OCR technology for automatic produce entry, sorting, and expiry alerts, aimed at reducing household food waste, which increased by 13.5% since the start of the pandemic.
- Invited as a guest speaker on the EMGirls podcast, with 500+ active listeners, where I shared insights on navigating the engineering and entrepreneurial fields, encouraging the next generation of women to pursue careers in STEM.

Gene Therapy Proposal for Paralysis Reversion | Revalysis

- Proposed a two-step treatment to reverse paralysis induced by spinal cord injuries with retroviral NeuroD1. Proposed a (biologist approved) two-step **gene therapy** treatment to reverse paralysis induced by spinal cord injuries using retroviral NeuroD1 transcription factor delivery and antibodies to facilitate remyelination.

GoosePeek | Hack the North Developer

- Collaborated with team to create a Chrome extension using React, HTML, TailwindCSS, Node.js, and Cohere API to monitor browsing behavior with real-time goose-themed pop-ups, used by myself and my peers to boost focus.
- Implemented functionality where pop-ups grow larger, and geese become angrier as users visit off-task sites, with added screen lag to discourage distractions and improve task alignment.

EduMe | GenAI Genesis Developer

- Developed an AI-powered education platform using Python, OpenAI, and YouTube APIs to generate personalized learning content tailored to users' learning styles, improving accessibility for students with disabilities.
- Integrated text-to-speech for auditory learners and designed a quiz system to assess user learning, with data used to continuously enhance the platform's personalized recommendations.

Tumor Predictor AI | Developer

- Implemented a **Linear Regression** model on **Google Colab**, utilizing **Pandas** and **TensorFlow** libraries that classify cancer diagnoses to 93% accuracy.

IsItWorthIt | Co-Founder & Developer

- Prototyped a web browser extension that reduces online impulse buying in **Java**, using **GitHub** and **VSCode**.
- Tested prototype with teen impulsive shoppers, resulting in an **average 48% decrease in monthly online purchases**.

Tetris Game & Bot | Developer

- Created a **Python** Tetris game using the **Pygame** library.
- Coded a **Tetris bot** for autonomous gameplay.

Hollow+ | Ideator & Innovator

- Innovated a tube-shaped, semipermeable bioreactor utilizing cellulose and synthetic polymers for cellular agriculture.
- Enhanced scalability and cost-efficiency, improves purification quality by eliminating dead zones and emulates the animal extracellular matrix.

Biotech Medium Articles | Writer & Researcher

- Eating a burger while saving a cow — Cellular Agriculture:**
<https://medium.com/@elili.sivam/eating-a-burger-while-saving-a-cow-cellular-agriculture-8e88cfab3d80>
- The new genome editing technology, prime editing:**
<https://medium.com/@elili.sivam/the-new-genome-editing-technology-prime-editing-70d2ed49eaa4>