**GAYATHIRI ELAMBOORANAN**

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**SKILLS**

**ML Frameworks:** Transformers, Prompt Engineering, TensorFlow, Scikit-learn, NLP, LLM, RAG, Lang chain, NLTK

**Data Tools:** Pandas, NumPy, Matplotlib, Seaborn, SciPy **|Databases:** Neo.4j, Pinecone

**Programming:** Python, C, Verilog **| Scripting & Markup:** SQL, HTML, CSS | **Testing**: JaCoCo white box, black box.

**Web Development:** Flask, Streamlit, Django, React.js, Next.js, Tailwind.css, Framer Motion, Bootstrap

**Tools & Platforms**: AWS, Linux, MATLAB, QualNet, Git, Atlassian **| Networking:** HTTP/2, Load Balancing & Routing Algorithms **Methodologies:** Agile, Waterfall, Continuous Improvement, Project Management, Data Pipelines

**EDUCATION**

**Master of Engineering – Electrical and Computer**

Concordia University, Montreal, Quebec, Canada **- 2024**

Relevant Coursework: Software Engineering, Software Testing, System Design, Higher Layer Tele Protocols.

**Bachelor of Engineering - Electronics and Communication**

SRM Institute of Science and Technology, Chennai, India **- 2021**

Relevant Coursework: Communication Systems, Embedded system design, Digital Circuits and Electronic Circuits.

**RESEARCH WORK**

**LLM-Based Root Cause Analysis, Concordia University (2024)**

* Led advanced root cause analysis within AWS microservices using Large Language Models (LLAMA, Mistral), TensorFlow, and Transformers to enhance system reliability and performance.
* Engineered robust data pipelines and performed preprocessing using Python, Pandas, and NumPy, integrated synthetic datasets with Pinecone for increased data analysis precision.
* Developed sophisticated knowledge graphs with Neo4J and implemented a Retrieval-Augmented Generation (RAG) system using the MIXTRAL model, employing zero-shot learning for enhanced predictive accuracy and autonomous problem-solving.
* Utilized prompt engineering techniques to tailor system queries for optimized accuracy and relevance of insights, using Matplotlib and Seaborn for effective data visualization to support decision-making and stakeholder communication

**PROJECTS**

**Freelancer Platform Website @ Concordia University (2023)**

Developed a user-friendly platform with Gmail/Facebook login, dynamic home screen, and task ticket creation.

* As Scrum Master, led project initiation and advancement with Agile practices, crafting UML diagrams, and coordinated effectively using GitHub, Jira, and MS Teams. Utilized Flask for backend development and leveraged HTML, CSS, and Bootstrap to elevate frontend user experience, coupled with SQL for database management.

**Design of Java robot Simulator @ Concordia University (2023)**

Developed a Java-based Robot Simulator program with graphical grid representation, allowing users to control a robot's movements and pen position through predefined commands in a two-dimensional environment.

* Worked on precise algorithms to control the robot's movements, pen actions, and grid interactions.
* Conducted unit and integration testing to assure the simulator's functionality and performance.

**Content Delivery Network Design and Implementation@ Concordia University (2023)**

Led the development of a high-performing Content Delivery Network (CDN) using the HTTP/2 protocol, enhancing video streaming with additional features for an optimal user experience.

* Integrated HTTP/2 to streamline data communication and implemented Round Robin for load distribution.

**WORKSHOP/ PUBLICATION**

* MATLAB Workshop: AI and Deep Learning - Space Concordia and MathWorks **2024**
* Fusion Routing Algorithm for Aerial Wireless Network - IJIRT JOURNAL **2021**

**VOLUNTEER EXPERIENCE**

* 8th Graduate Student Research Conference, Concordia University **2024**
* Health and Hygiene Awareness, Remote Villages **2021**