Kiarash Alirezaei

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Education

University of Toronto, St.George *Toronto, Ontario*

Bachelor of Applied Science in Computer Engineering *Sep 2022 - May 2026*

Relevant Coursework: Linear Algebra (MATLAB), Programming Fundamentals (C++), Digital Systems (Verilog), Computer Organization (Assembly), Software Communication and Design (C++), Signals and Systems (MATLAB), Applied Fundamentals of Deep Learning (Python)

Experience

Toronto Metropolitan University *May 2024 - Aug 2024*

Fullstack Developer, USRA Intern *Toronto, Ontario*

- Designed and implemented RESTful APIs by adding and editing endpoints, integrating complex backend logic in Java, and ensuring seamless interaction between users and the system.
- Enhanced database interaction by scripting queries to add, modify, and retrieve data from MongoDB, optimizing API performance and data handling.
- Integrated Apache Solr for search functionality, replacing MongoDB search queries, resulting in over 100% improvement in search performance and response times.
- Developed user-friendly frontend interfaces using React, focusing on data visualization, API integration, and improving user interaction with the application.
- Implemented efficient state management and API calls with React Query (useQuery), significantly enhancing frontend responsiveness and data handling.

Freelance Web Developer – RENOV8 INC *Dec 2023 – Jan 2024*

Business Website: renov8inc.ca *Toronto, Ontario*

- Created a responsive business website for RENOV8 INC., a renovation company, utilizing React JavaScript and CSS.
- Independently designed and implemented a website, showcasing strong front-end development skills and enhancing my capabilities in web design, contributing to a successful online presence for the client.

Projects

Deep Learning Skin Cancer Classifier | *Python, PyTorch, Matplotlib, CNNs, Transfer Learning* *May 2024 – Aug 2024*

- Utilized PyTorch to generate labelled training and testing datasets, applying advanced augmentations to address data insufficiency, ensuring robust model training.
- Designed a complex deep learning model incorporating U-Net for precise image segmentation, followed by ResNet-50 for feature extraction and MLP for classification, enabling accurate identification of skin cancer types.
- Achieved 85% accuracy by hyperparameter tuning across the U-Net, CNNs, and MLP, optimizing the model's performance and reliability in diagnosing skin cancer.

Interactive Maps Application Development | *C++, EZGL, GTK* *Feb 2024 – Mar 2024*

- **Language Integration:** Integrated C++ and the STL library within a comprehensive maps application project, enhancing functionality and performance.
- **API Integration and Management:** Implemented and managed API calls for real-time data processing and visualization, ensuring dynamic user interactions and up-to-date information.
- **UI/UX Design:** Collaborated in designing and developing the application's user interface and experience, creating an intuitive navigation and aesthetic appeal.
- **Algorithm Implementation:**Integrated advanced pathfinding algorithms such as Multi-Dijkstra's and A*, along with a solution for the Traveling Salesman Problem, boosting the application's route optimization and efficiency.

Digital Game System - FPGA Development | *Verilog, Modelsim, FPGA, VGA, PS2* *Sep 2023 - Dec 2023*

- Engineered digital game system using Verilog on the DE1-SoC board, showcasing expertise in digital design.
- Advanced Control Logic: Developed complex Finite State Machines (FSMs), datapaths, and memory blocks to enable precise control and dynamic gameplay.
- Multifunctional Memory Blocks: Designed and implemented memory blocks supporting user play memory, audio storage, and additional functionalities.

SportApp | *React Native, JavaScript* *July 2023 - Sep 2023*

- Developed a mobile app using JavaScript and React Native for real-time soccer statistics for over 60 teams and 1500 players.
- **API Integration:** Successfully integrated an API for live data updates, enhancing app functionality and ensuring up-to-the-minute accuracy of soccer stats.

Technical Skills

Languages: Java, Python, C/C++, JavaScript, HTML, CSS, SQL, Assembly, Verilog, MATLAB
Frameworks: React, Django, React Native, Spring Boot, Quartus
Developer Tools: Docker, Git, Modelsim, FPGA (DE1-SoC), CPUlator, Google Colab
Libraries: PyTorch, TensorFlow, NumPy, Matplotlib, PyGame, MySQL, MongoDB, Apache Solr, EZGL, GTK
Concepts: REST APIs, Deep Learning, Transfer Learning, Version Control, Artificial Intelligence, Machine Learning, Neural Networks, API Development, Data Normalization, Database Management, State Management, UI/UX Design, Agile Development