

NATHAN PROBERT

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WORK EXPERIENCE

Evertz.io

May 2024 – Present

Software Developer Intern | Python, AWS, Postman, Git, GitHub Actions

Toronto, Ontario

- Optimized CI/CD workflows by identifying and implementing a faster linting solution, while also streamlining static code analysis through **parallelization**, cutting GitHub Actions runtime by over **70%** and significantly reducing build costs
- Automated execution and reporting of Blue-Green deployments through controller **Step Functions**, utilized **AWS Lambda** functions with **EventBridge** to handle and report status updates to websocket sessions, improving client experience
- Migrated **AWS REST API** calls to **WebSocket** connections for bidirectional communication and lower latency
- Designed and implemented an **API Gateway** for command execution and output retrieval on **AWS EC2** instances, allowing users to run commands with varying levels of permission, increasing accessibility and security

PROJECTS

Imagine | [Launch](#) | Python, Flask, GitHub Actions, AWS, React, TailwindCSS, TypeScript, MongoDB

[Repository](#)

- Co-developed a **full-stack image guessing game** using React and Flask, aimed at helping users learn to spot differences between AI-generated and authentic images based on a daily theme
- Built a text-to-image generation pipeline leveraging Hugging Face Diffusers and **PyTorch** for creating lifelike images, automating prompt generation with **LLaMA 3.1**, and integrating **MongoDB** for streamlined data handling and storage
- Constructed a CI/CD pipeline with GitHub Actions and **AWS CloudFormation** to automatically build, test, and deploy AWS Lambda functions, reducing development cycle time by **50%**

SmartScore - Predict NHL Goalscorers | [Launch](#) | Python, Tensorflow, pandas, NumPy, React

[Repository](#)

- Engineered an AI application for the **Tim Horton's Hockey Challenge** to predict a player's probability of scoring a goal in a given game, using **multiple linear regression** and **machine learning** with TensorFlow, pandas, and NumPy
- Integrated **C** with Python through **ctypes** for data processing and calculations, enhancing application speed by **97%**
- Built a user-friendly **React** interface for dynamic player stats exploration, including viewing, sorting, and filtering options
- Analyzed real-time betting odds to identify optimal bets using predictive models, enhancing user decision-making

Wordle Wizard | Java

[Repository](#)

- Developed a **Wordle** solving application that optimizes guesses by analyzing character frequency and positional analysis, formulating guesses with the goal of eliminating the maximum number of alternative words each attempt
- Designed a ranking algorithm that prioritizes words by optimal traits and popularity to enhance accuracy

EDUCATION

University of Guelph

Expected: 2022 – 2026

Bachelor of Computing in Computer Science Honours, Minor in Business Economics

Guelph, Ontario

- Maintaining a **95.9%** degree average, **93.4%** overall - Dean's Honours List in every semester
- Relevant Coursework:** Data Structures and Algorithms, Object-Oriented Programming, Operating Systems, Discrete Mathematics, Statistics, Software Development, Programming

Key Academic Projects

Billiards | Python, C, Docker, JavaScript, HTML, CSS, SWIG

[Repository](#)

- Developed a billiards game simulation leveraging **C** for efficient calculations of ball trajectories and collision detection
- Utilized **SQL** for account and game management, implementing features such as undo shot and dynamic leaderboards

Mancala | Java, Docker, Gradle

[Repository](#)

- Developed a comprehensive Mancala game package, incorporating core OOP principles for effective and modular code
- Utilized **serialization** techniques for game and account management, enabling progress preservation and recovery
- Employed a test-driven environment utilizing JUnit to conduct extensive testing of various game states

TECHNICAL SKILLS

Languages: Python, Java, C, Rust, HTML, CSS, JavaScript, SQL, Bash

Tools/Frameworks: Git, AWS, Postman, React, JUnit, Docker, pytest, JIRA, Confluence, Tensorflow, NumPy, pandas, Jenkins

Concepts: Agile Methodologies, Full Stack, Frontend, Backend, REST, CI/CD, Databases, Cloud Computing, Serverless Computing, Test-Driven Development, Logging, Microservices Architecture, DevOps, Machine Learning, Artificial Intelligence