

Varendra Saith

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Graduate Software Developer, with a passion for game development and machine learning. Transitioned from a geophysics background, with over six years in seismic data analysis and regulatory projects. Experienced in cross-functional collaboration, by leveraging my analytical and problem-solving expertise to develop robust and unique solutions.

SKILLS

Programming Languages: C++, CSS, HTML, Javascript, MySQL, Python, UML

Frameworks and Libraries: Bootstrap, jQuery, Keras, OpenGL, TensorFlow

Tools: Git, QGIS, Visual Paradigm, Visual Studio, VSCode

WORK EXPERIENCE

Ministry of Energy and Energy Industries

Trinidad and Tobago • 01/2019 - 08/2023

Geophysicist

- Developed spatial assessment tools using **QGIS** and **Python** to evaluate the feasibility of seismic acquisition programs, shortening exploration planning to two months while considering infrastructure, environmental, and population constraints.
- Served as the lead geophysicist on a **government appointed review committee** to determine technical and financial viability of **proposed hydrocarbon exploration programs** in deepwater and frontier environments.
- Led multi-disciplinary teams in the planning and review of high-stakes energy exploration projects, balancing technical feasibility with environmental, social, and infrastructural constraints.
- Translated complex scientific data into actionable insights for non-technical stakeholders, strengthening policy decisions and investment strategy.
- Introduced streamlined workflows and documentation standards for large-scale geophysical datasets, improving team productivity and data integrity.

PROJECTS

3D Game and Engine Design

University of Dundee

- Developed a custom 3D FPS game and game engine from first principles using **C++** and **OpenGL**, integrating open-source low-level libraries for support.
- Developed expertise across the entire graphics pipeline, such as **shaders**, **lighting models** and **GPU resource management**.
- Implemented **rendering optimisation** techniques, such as object culling, and created an asset management system to handle textures, models and player data efficiently.
- Engineered innovative animation solutions, including billboard sprites for enemy animations, eliminating the need to load complex meshes, resulting in significant runtime efficiency improvements.
- Developed precise hit registration and collision detection systems, **enhancing gameplay responsiveness** and accuracy.

Image Classification using Machine Learning and Neural Networks

- Developed and tested multiple supervised and unsupervised neural network models using **Keras** to detect pneumonia in CT scans with the MedMNIST dataset.
- Achieved a **detection accuracy of 92%** by iteratively refining network architecture based on **ROC curves**, **confusion matrices**, and **accuracy/loss metrics**.
- Improved **model performance by 23%** through targeted adjustments in network design and architecture, and hyperparameter tuning.

Web Application Development

- Created a web application that recommends local events and provides weekly weather forecasts based on user-selected locations.
- Integrated external APIs including WeatherAPI and TicketMasterAPI to deliver real-time weather and event data.
- Developed responsive UI using Bootstrap and JQuery, ensuring cross-platform compatibility and WCAG AA accessibility compliance through thorough testing.

EDUCATION

MSc in Computer Science

University of Dundee • GPA: Distinction

Dundee • 09/2023 - 09/2024

Modules:

- Software Development, Software Engineering, Web Application Development, Database Systems, Machine Learning, Human Computer Interaction, Computer Graphics, Advanced Programming Techniques

BSc in Petroleum Geoscience

University of the West Indies • GPA: Hons

St Augustine, Trinidad and Tobago • 09/2015 - 06/2018

Modules:

- Statistics, Applied Mathematics, Applied Chemistry, Engineering Technology, Geophysics, Geology, GIS.

VOLUNTEERING & LEADERSHIP

Department of Computing - University of Dundee

01/2024 - 09/2024

MSc Student Representative

Served as the student representative for the MSc Computing 2023/2024 cohort, responsible for addressing student concerns and communicating necessary changes to teaching staff to improve future experiences.

Society of Exploration Geophysicists (SEG) - UWI Student Chapter

02/2017 - 04/2020

President

- Organized and led student events and workshops to promote the study of geophysics, enhancing student engagement and learning opportunities.
- Conducted outreach programs with high schools, promoting STEM education in local schools and encouraging interest in geophysics among younger students

AWARDS & SCHOLARSHIPS

Best Overall Student in Conversion Masters

11/2024

University of Dundee

Global Excellence Scholarship

09/2023

University of Dundee

Best Overall Performance - 2016, 2017, 2018

University of the West Indies

Top Academic Performer - 2016, 2017

University of the West Indies

National Scholarship Winner (Natural Sciences)

10/2015

Government of the Republic of Trinidad and Tobago