

# GEORGE PAULSON

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## SUMMARY

Engineer experienced in system-level problem solving, low-level systems, and cloud-native microservices.

## EDUCATION

<b>Trinity College Dublin</b> <i>M.Sc. in Electronic Information Engineering (Grade: 1.1 / First Class Honours)</i>	Dublin, Ireland 2024 – 2025
<b>Manipal Institute of Technology</b> <i>B.Tech in Electronics and Communication Engineering (CGPA: 8.49/10)</i>	Manipal, India 2020 – 2024

## EXPERIENCE

<b>Embedded Software Intern — Whirlpool Corporation</b> – Built a real-time AWS dashboard with telemetry pipelines for anomaly detection, predictive maintenance, and reduced manual monitoring. – Integrated smart sensors and automated calibration logic to improve reliability, precision, and operational efficiency in material dispensing systems. – Developed firmware for autonomous, high-accuracy load cell dispensing using Arduino and embedded C.	Pune, India	Jan 2024 – Jun 2024
<b>Machine Learning Intern — Daimler Asia</b> – Performed AI-driven failure analysis using Python and ML models for predictive component reliability. – Collaborated with engineering teams to derive process insights and recommend data-driven improvements.	Chennai, India	Dec 2022 – Jan 2023
<b>AI Subsystem Head — International Society of Automation</b> – Led the AI subsystem, mentoring contributors and deploying ML solutions in cross-disciplinary automation projects.	Manipal, India	Nov 2022 – Sep 2023

## PROJECTS

<b>Optical QoT Simulation Framework Integration</b> (MSc Thesis – Trinity College Dublin)   Python, Flask, gRPC, Kubernetes, Teraflow-SDN – Designed a modular, container-ready microservice architecture using Python, Flask, and gRPC for real-time QoT computation (OSNR, BER, latency). – Implemented REST/gRPC interfaces to process network topology JSON inputs and return QoT metrics for automated service feasibility decisions. – Modeled multi-hop optical paths including spans, amplifiers, and fiber parameters to enable telemetry-informed path provisioning on SDN platforms.
<b>64-bit Operating System Development</b>   C, Assembly, QEMU, FAT16, PS/2, USB Boot – Developed a 64-bit operating system from scratch in C and Assembly with a custom bootloader and kernel. – Implemented memory management, interrupt handling, system calls, PS/2 keyboard driver, and FAT16 file system. – Debugged kernel crashes, memory faults, and interrupt handling issues using QEMU and GDB, demonstrating full-stack system reliability and problem isolation.
<b>C++ Expression and Query Parser</b>   C++, OOP, Grammar Rules, Compiler Design – Designed a modular parser using abstraction and inversion of control for extensible expression and SQL-like grammars. – Built custom tokenization and syntax validation components for mathematical and query processing.
<b>Broken Railway Detection</b>   Python, TensorFlow, OpenCV, Scikit-Learn – Detected railway track faults using SVM, Random Forests, Convolutional Neural Networks, and Vision Transformers.

## PUBLICATIONS

<b>Regression analysis of metamaterial antenna using decision and extra tree regressors.</b> In 2023 International Conference on Modeling, Simulation and Intelligent Computing (MoSICom), pp. 313–316, 2023. <b>Authors:</b> G. Paulson, K. Upadhyay, P. Dighe, S. Pathan, and Tanweer.
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## TECHNICAL SKILLS

<b>Programming</b> C, C++, Python, Shell Scripting, Linux (Ubuntu), Bash, Makefile, GCC/GDB, QEMU, CUDA
<b>Operating Systems</b> Memory management, bootloaders, interrupts, file systems, drivers, x86_64 architecture
<b>Networking &amp; Protocols:</b> UART, SPI, I2C, TCP/IP Stack, Socket Programming, REST/gRPC API development
<b>Data &amp; AI Tools:</b> NumPy, Pandas, Scikit-Learn, TensorFlow, PyTorch, MATLAB, SQL
<b>Cloud &amp; DevOps:</b> AWS, Azure, Docker, Kubernetes, CI/CD, Containerization, Telemetry & Monitoring

## AWARDS AND ACHIEVEMENTS

<b>3rd Position:</b> Daimler India Commercial Vehicles Hackathon (2022)
<b>National Finalist:</b> AIIMS New Delhi Insight Medathon (2023)
<b>2nd Position:</b> Manipal Biotech Hackathon (2022)
<b>2nd Position:</b> ISA-BMS College of Engineering Project Presentation (2023)