

# 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>	Pune, India	Jan 2024 – Jun 2024
– 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.		
<b>Machine Learning Intern — Daimler Asia</b>	Chennai, India	Dec 2022 – Jan 2023
– 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.		
<b>AI Subsystem Head — International Society of Automation</b>	Manipal, India	Nov 2022 – Sep 2023
– Led the AI subsystem, mentoring contributors and deploying ML solutions in cross-disciplinary automation projects.		

## PROJECTS

<b>Optical QoT Simulation Framework Integration</b> ( <i>MSc Thesis – Trinity College Dublin</i> )   <i>Python, Flask, gRPC, Kubernetes, Teraflow-SDN</i>	
– 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>   <i>C, Assembly, QEMU, FAT16, PS/2, USB Boot</i>	
– 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>   <i>C++, OOP, Grammar Rules, Compiler Design</i>	
– 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>   <i>Python, TensorFlow, OpenCV, Scikit-Learn</i>	
– Detected railway track faults using SVM, Random Forests, Convolutional Neural Networks, and Vision Transformers.	

## PUBLICATIONS

**Regression analysis of metamaterial antenna using decision and extra tree regressors.** In *2023 International Conference on Modeling, Simulation and Intelligent Computing (MoSICoM)*, pp. 313–316, 2023.

**Authors:** G. Paulson, K. Upadhyay, P. Dighe, S. Pathan, and Tanweer.

## TECHNICAL SKILLS

**Programming** C, C++, Python, Shell Scripting, Linux (Ubuntu), Bash, Makefile, GCC/GDB, QEMU, CUDA

**Operating Systems** Memory management, bootloaders, interrupts, file systems, drivers, x86\_64 architecture

**Networking & Protocols:** UART, SPI, I2C, TCP/IP Stack, Socket Programming, REST/gRPC API development

**Data & AI Tools:** NumPy, Pandas, Scikit-Learn, TensorFlow, PyTorch, MATLAB, SQL

**Cloud & DevOps:** AWS, Azure, Docker, Kubernetes, CI/CD, Containerization, Telemetry & Monitoring

## AWARDS AND ACHIEVEMENTS

**3rd Position:** Daimler India Commercial Vehicles Hackathon (2022)

**National Finalist:** AIIMS New Delhi Insight Medathon (2023)

**2nd Position:** Manipal Biotech Hackathon (2022)

**2nd Position:** ISA-BMS College of Engineering Project Presentation (2023)