Michael McCallion

Sydney, NSW
Mobile: +61 431 574 714

Email: michaelgermccallion@gmail.com

Personal Profile

I am a motivated and detail-oriented software engineer with hands-on experience developing production-level C# code for Abbott's FreeStyle Libre 2, 2+, 3, and 3+ products, contributing to systems that support the large-scale production of glucose monitoring sensors. Alongside this industry experience, I hold an MSc in Artificial Intelligence from Ulster University, where I developed a deep expertise in machine learning, data science and intelligent systems development. My MSc research explored the potential of the human 'breathprint' as a novel biometric identification method, implementing advanced feature selection and classification models to evaluate its uniqueness and accuracy. This academic foundation, combined with professional experience in C# software development, has provided me with a strong balance of AI expertise and practical engineering capability. I am passionate about leveraging my skills in AI, automation and scalable software systems to drive innovation and efficiency within technology-focused environments.

Education

2023-2024 Ulster University Belfast MSc Artificial Intelligence – Final Classification: Distinction

2019-2023 Queen's University Belfast BSc Computing and Information Technology (including Professional Experience) – Final Classification: 2:1

Professional Experience

Software Engineer - Abbott Diabetes Care (Donegal, Ireland | November 2024 - January 2026)

- Develop and maintain C# and SQL applications used in the production of FreeStyle Libre 2, 2+, 3 and 3+ sensors, supporting the automation and reliability of large-scale manufacturing processes.
- Collaborate with cross-functional teams, including Quality Assurance, Supply Chain, Sensor Engineering and Manufacturing Operations, to investigate and resolve issues promptly, logging and tracking defects through internal systems.
- Design and implement new software features to enhance manufacturing efficiency, including the development of electronic batch record (EBR) systems to replace legacy paper-based methods.
- Create systems that guide operators through each stage of sensor production, ensuring accurate material usage, equipment verification, and process validation before proceeding to subsequent steps.
- Conduct User Acceptance Testing (UAT) to validate new functionality and confirm successful deployment to production environments.
- Actively participate in daily stand-up meetings to communicate progress, discuss project timelines and coordinate tasks across multiple engineering teams.
- Gained a strong understanding of sensor production workflows, contributing to both the initial screen manufacturing process and final foil bagging stage, ensuring full lifecycle knowledge of the product line.

Technical Skills

Development Languages: C#, SQL, Python (OpenCV, TensorFlow, PyTorch, scikit-learn, NumPy), R, ROS, Java, HTML, CSS, JavaScript, PHP

Extensive experience in C# and SQL development through professional work at Abbott Diabetes Care, contributing to the production systems behind the FreeStyle Libre 2, 2+, 3 and 3+ glucose monitoring products. This involved developing new features and automating key stages of the manufacturing process, including electronic batch record systems that replaced legacy paper-based workflows. Strong understanding of software lifecycle practices, defect tracking and user acceptance testing within regulated environments. Additionally, I have significant experience in Python programming, with a strong focus on machine learning and artificial intelligence. During my MSc project on Human 'Breathprint' Identification, I implemented regression and classification models using advanced feature selection techniques to evaluate the system's potential as a biometric tool. My wider experience includes reinforcement learning model development, robotic simulation using ROS Turtlesim, and cloud-based machine learning pipeline deployment on Microsoft Azure, where I containerised trained models using Docker for scalability and performance testing.

Projects

At Abbott, I contributed to the development and enhancement of software systems used in the manufacturing of FreeStyle Libre glucose monitoring sensors. This included working on major projects such as Screen Manufacturing (first stage of sensor assembly) and Foil Bagging (final packaging stage), developing process tracking applications that ensured material and equipment validation, database updates and compliance with manufacturing protocols.

For my MSc in Artificial Intelligence, I developed a novel biometric identification system, based on the concept of a human 'breathprint'. This project involved following the CRISP-DM lifecycle, including extensive data pre-processing and cleaning, as well as feature engineering and extraction. I applied regression algorithms such as Lasso, Ridge and ElasticNet to select the most relevant features from the dataset. I then implemented and evaluated classifier models, including Support Vector Machines (SVMs) and Random Forests, to classify models based on their breathprints and determine the uniqueness and accuracy of this biometric approach. The project demonstrated my strong analytical abilities, expertise in machine learning and proficiency in Python.

Employment Experience

Software Engineer (MES), Abbott Diabetes Care (November 2024 - January 2026) Location: Donegal Town, Co. Donegal.

- Developed and maintained front-end and back-end applications using C# and SQL to support the production of FreeStyle Libre sensors, automating and optimising key manufacturing processes.
- Designed and implemented an EBR system to replace paper-based workflows, improving traceability, accuracy and regulatory compliance in sensor production.

Graduate Research Associate, BT Ireland Innovation Research Centre (April 2024 – September 2024) Location: Ulster University Belfast

- Developed Python-based solutions for a smart city project at Belfast Harbour, focusing on IoT systems to enhance urban infrastructure and data-driven decision-making.
- Collaborated with cross-functional teams to design and implement scalable IoT architectures, contributing to the real-time monitoring and automation of city services.

Retail Assistant, The Range (Sept 2023 – March 2024) Location: Boucher Road, Belfast

Network Administrator, Cedar Foundation (12 months July 2021-July 2022) Employer: Abigail Warnock – Location: Bangor, Co. Down.

Office Worker, Abertay Training (6 months 2019-2020) Employer: Paul Horsburgh – Location: Gortin, Co. Tyrone

Intern, Price Waterhouse Cooper (3 month internship – June 2017 - August 2017) Location: Belfast, Co. Antrim

Skills Profile

Organisation: Demonstrated strong organisational skills through the successful management of complex projects, such as developing a biometric identification system and IoT solutions for smart city infrastructure. This involved coordinating multiple tasks, adhering to timelines, and ensuring project milestones were met efficiently.

Communication: Effectively communicated complex technical concepts, such as AI models and IoT architectures, to both technical and non-technical stakeholders. This was essential during collaborations with cross-functional teams at BT Ireland Innovation Research Centre and in academic settings.

Adaptability: Quickly adapted to new challenges and technologies, as shown by my ability to transition between different AI techniques, cloud platforms, and IoT systems. This adaptability enables me to work effectively on diverse projects, from implementing machine learning models to developing smart city solutions.

Referees

Dr Omar Nibouche, Senior Lecturer, Ulster University
Email: o.nibouche@ulster.ac.uk
Tel: +44 28 9536 5847

Kieran McMonagle, MES Software Engineering Team Lead, Abbott Diabetes Care
Email: kieran.mcmonagle@abbott.com
Tel: N/A