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Theodor Baur

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Employment

Audit - IT Specialist **Deloitte** **September 2025 - Present**

Offer accepted for a full-time IT Audit role at Deloitte, starting in September 2025.

Software Development Intern **Global Aerospace** **Summer 2024, Summer 2023**

Banks Project

- Created an interface to input and normalize unformatted insurance policy data sent by banks to store in an internal database using **Visual Basic** and **SQL**.
- Created an automated interactive data analysis report system using **PowerBI**, integrated with the internal database via **SQL**, allowing for data projections, filtering, and insurance policy comparisons.

Education

Cardiff **Cardiff University** **September 2021 - September 2025**

- **MSc Artificial Intelligence** - *Distinction (78%)* *Sep 2024 – Sep 2025*
  - Modules: Principles of Machine Learning; Automated Reasoning; Computer Vision; Natural Language Processing.
- **BSc Computer Science** - *First Class Honours (77%)* *Sep 2021 – Jun 2024*
  - Modules: Web Applications (98%); Object-Oriented Java Programming (87%); Group Project (89%); Data Processing and Visualisation (91%); Computational Mathematics (77%); Scientific Computing (74%).

Projects

- **MSc Dissertation: MRI Super-Resolution Enhancement using Machine Learning** - *Final Mark: 85%* *2025*
  A generative adversarial network trained to accurately enhance MRI scans from 1.5T scanners to 3T quality.
  - Used **JAX** with **Docker** to build and containerise a pipeline which degrades 3T images into 1.5T quality using k-space to create a simulated dataset for training.
  - Trained an ESRGAN-based network using **Pytorch** with a novel composite loss function, achieving 96% SSIM.
- **Neural Network Built from Scratch** *2025*
  A neural network that uses Near Infra-Red Spectroscopy data to predict the dry matter content of mangos.
  - Developed without the assistance of ML libraries and implemented entirely using **NumPy** with linear algebra to gain a better understanding of basic machine learning concepts
  - Manually implemented entire neural network, gradient descent and backpropagation algorithm.
- **BSc Dissertation: Retrieval-Augmented Fact-Checking System** - *Final Mark: 84%* *2024*
  A system written in **Python** and version controlled in **Git** that uses **NLP** to automatically retrieve evidence from an **Elasticsearch** database for user-made statements and assess truthfulness.
  - Encoded and indexed evidence passages in **Elasticsearch** for semantic similarity search.
  - Fine-tuned **HuggingFace** models to evaluate passage relevance for evidence retrieval.
  - Used a Mistral-based **LLM** to generate the final truthfulness assessment.
- **Tool Share Cardiff** *2023*
  A **Flask** website group project that allows Cardiff community members to list and rent tools with a deposit payment system.
  - Implemented payment system using **Stripe API** and interactive map view using **Google Maps API**.
  - Managed users, tools, messages, reviews, reports, orders, and disputes using an **SQLite** database.
  - Effectively used **Git** branching strategies for version control among team.

Technical Skills

- **Programming Languages**: Python, JavaScript, Visual Basic
- **Tools and Technologies**: HTML, CSS, Git, Flask, SQL, Power BI, JAX, Docker, PyTorch, RESTful APIs

Awards

- Awarded academic scholarships for both Bachelor's and Master's degrees at Cardiff University.
- Prize winner of the "100 Big Ideas" competition for a software start-up idea.