

THOMAS BURKE

contact@thomasburke.co.uk

EDUCATION

The University of Sheffield

2022 - 2025

BEng Hons Computer Science (Software Engineering)

2:1

TECHNICAL SKILLS

- Programming Languages: Python, Java, JavaScript, SQL, HTML, CSS
- Tools & Technologies: Git, CI/CD, AWS, Docker, Linux, High Performance Computing
- Home Server: NAS, Containerisation, Virtual Machines, Security, Backups

SOFTWARE EXPERIENCE

End-to-End Encrypted Messaging App

- Built a secure, real-time messaging web app with end-to-end encryption (RSA-4096 + AES-256-GCM), WebSockets (Socket.io) for real-time communication.
- Developed a responsive frontend using React and Tailwind CSS, with a REST API backend built on Express and PostgreSQL.
- Wrote an extensive test suite using Vitest, Supertest and jsdom, achieving coverage across frontend components and API endpoints.

Pose-Based Person Identification using Deep Learning *(Dissertation Project)*

- Built and compared feedforward and bidirectional GRU architectures for person identification from body pose sequences using the PoseTrack21 dataset.
- Automated hyperparameter tuning with Optuna, using NVIDIA H100 GPU nodes on the UoS HPC Cluster. Augmented training sequences using a sliding window approach.
- Evaluated models using top-1 accuracy, Expected Calibration Error, reliability diagrams, and confusion matrices to analyse misclassification patterns, visualising results with Matplotlib and Seaborn.
- Conducted occlusion-based ablation tests across body joints to identify the most discriminative pose keypoints for identity, using PyTorch, NumPy and Pandas for data processing and scikit-learn for evaluation metrics.

Software Hut Group Project– Workplace Training Platform *(University of Sheffield, AMRC)*

- Developed an online workplace training platform in Ruby on Rails and PostgreSQL allowing businesses to create, manage, and assign training courses. Tested using RSpec, achieving 86% code coverage.
- Built the frontend using HAML and Bootstrap for responsive and accessible views.
- Worked with a non-technical client from the AMRC, attending weekly meetings to extract requirements, demo progress, and iteratively refine features.
- Agile development with weekly sprints and a Kanban board to manage tasks.

FaceCrypt

- Developed a security application using AES-128 (implemented from scratch in Python following the NIST specification) and LBPH facial recognition for two-factor authentication.
- Built a desktop interface with Tkinter and OpenCV for face detection and recognition, and used a MySQL database to store user credentials and encryption keys, deployed on AWS EC2 + RDS.

RELEVANT EXPERIENCE

Cycle Technician

Sep 2025 - Present

Summat Creative

- Diagnosed and repaired mechanical issues, ensuring safety and functionality.
- Provided excellent customer service and communicated effectively with clients.

SOFT SKILLS

- Soft Skills: Adaptive Communication, Active Listening, Team Collaboration, Leadership, Providing/Receiving Feedback.
- Problem Solving: Proficient in identifying and troubleshooting software errors.
- Resilience: Proven ability to overcome setbacks and achieve goals.

INTERESTS

- Digital Security & Privacy, Cryptography, Home Server, Cycling, Hiking

