Alex Chavez

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PROFILE

Final-year Computer Science student (predicted First) with professional experience delivering digital transformation and data-driven software solutions in operational environments. Skilled in systems integration, API development, database design, cloud platforms including AWS and AI-enabled applications. Strong track record of analysing processes, gathering stakeholder requirements and deploying solutions that drive measurable operational improvement. Experienced in Power Apps, Python, Golang and JavaScript with hands-on exposure to manufacturing and laboratory environments. Recognised through competitive innovation programmes including the Cal Henderson Innovation Seed Fund and the Santander STEAM Pitch Competition.

RELEVANT EXPERIENCE

Visiting Demonstrator in Computing **Sep 2025 - Present**
Birmingham City University

- Mentor 40+ students through a 12-week Innovation Project lifecycle. Support multidisciplinary teams building solutions that combine hardware such as Arduino and Raspberry Pi with software including Python and computer vision.
- Facilitated effective team collaboration by clearly communicating technical concepts and ensuring balanced contribution across project tasks.

Systems Developer - Industrial Placement **Sep 2024 - Sep 2025**
Birmingham City University

- Led end-to-end digital transformation of assessment monitoring processes by delivering the Assessment Health Check platform via Power Apps to track submission data across 250+ modules improving process efficiency by 30%.
- Conducted structured requirements analysis with senior academic stakeholders including the Head of College and Deputy Head. Translated operational needs into system architecture, data models, role-based access controls and workflow automation.
- Designed and deployed an automated tutor allocation system in Python using a two-phase constraint-based algorithm to assign 2,500+ students to tutors. Eliminated manual allocation and significantly reduced administrative overhead.
- Built and deployed an AI-powered academic support chatbot system using OpenAI GPT, FlowiseAI and Pinecone vector database. The system served 500+ students and used retrieval-augmented generation, document embeddings and prompt engineering.
- Delivered pilot testing, user acceptance testing, technical documentation and training sessions to support adoption by both technical and non-technical staff across multiple departments.

Feasibility Study Research Assistant **Sep 2024 - Oct 2024**
Penta Pattern & Model

- Contributed to a materials engineering research project investigating how annealing methods affect the mechanical performance of ULTEM 9085 polymer parts manufactured via material extrusion.
- Operated an Instron machine to conduct materials characterisation including dimensional measurement, hardness testing, surface roughness analysis, Three-Point Bending and Tensile Testing across multiple temperature conditions.
- Systematically recorded and structured material property data in Excel across three annealing conditions. Supported analysis identifying tensile strength improvements of up to 28.1% and flexural strength gains of 13.9%. This provided quantitative evidence to inform manufacturing process selection.

EDUCATION

BSc (Hons) Computer Science with Professional Placement Year **Sept 2022 - Present**
Birmingham City University

Predicted Grade: First-Class - Key Modules:

- **Cloud Computing** (Predicted First) - Hands-on deployment of AWS infrastructure including EC2, S3 and RDS. Group project designing and presenting a fully cloud-hosted fault-tolerant web application.
- **Artificial Intelligence and Machine Learning** (74%) - Built and evaluated supervised ML models for classification and regression in Python using scikit-learn. Applied a full pipeline covering data preprocessing,

feature engineering, model selection, hyperparameter tuning and performance evaluation on a real-world dataset.

- **Object-Oriented Programming** (82%) - Applied OOP principles in Java to design modular, maintainable and reusable software systems.
- **Network Fundamentals** (90%) - CCNA1 concepts. Built and configured LANs, IP protocols and network architecture.
- **Database and Web Application Development** - 73% - Designed and implemented MySQL-backed web applications including data modelling and server-side scripting.
- **Software Design** - 70% - Requirements analysis, UML modelling and system design from concept to deployment.

International Baccalaureate (IB) Diploma **Jan 2019 - Dec 2021**
Colegio San Agustin de Lima

- Achieved IB Diploma scoring 6 out of 7 in English and Business Management.

PROJECTS & AWARDS

CombiLive - Real-Time Transport Monitoring Platform (Final Year Project)

- Designed and built a real-time transport monitoring system. Integrated Firebase Realtime Database, live GPS tracking, Google Maps SDK, Directions API and Firebase Authentication to deliver live data capture, API integration and a scalable cloud-backed architecture.
- Structured the data layer around individual bus nodes for dynamic scalability without code changes. Input validation and security rules ensured data integrity throughout.
- Awarded the Cal Henderson Innovation Seed Fund and Santander STEAM Pitch Competition prize. Recognised as the top Computer Science project in the competition.

AI-Powered Academic Support Chatbot System

- Designed and deployed a multi-agent LLM pipeline using OpenAI GPT, FlowiseAI and Pinecone vector database. Incorporated retrieval-augmented generation, document embedding, chat memory and prompt constraints to serve 500+ students.
- Experience directly applicable to the KTP project requirements for AI-enabled quotation tools, document parsing and automated decision-making.

Automated Tutor Allocation System (Python)

- Built a scalable constraint-based matching algorithm to assign 2,500+ students to tutors based on preferences, course, year and tutor capacity. Implemented fallback logic to ensure balanced allocation across staff roles.

Functional REST API - Microservices Architecture (Golang + JavaScript)

- Built a microservices-based API with relational database integration and a lightweight front-end interface. Demonstrated modular system design and scalable data handling.

Best Entrepreneurial Project - BCU Innovation Fest (Smart Slopes)

- Led development of Smart Slopes, adaptive ramps aiding wheelchair users in evacuations. Awarded Best Entrepreneurial Project across all disciplines at BCU Innovation Fest 2023.

WORK EXPERIENCE

Website Developer **Jul 2024 – Aug 2024**
Alterna Market

- Developed an e-commerce website, enabling online ordering and basic store management functionality.

Front of House Assistant **Jul 2023 – May 2024**
The Early Bird Bakery

- Delivered customer service in a fast-paced environment, maintaining clear communication and order handling.

SKILLS

- Programming Languages: Python, Java, Golang, JavaScript and PHP
- Cloud and Infrastructure: AWS including EC2, S3 and RDS; Power Platform and Power Apps; Git
- Data and Integration: MySQL, Firebase Realtime Database and REST APIs
- AI and Machine Learning: OpenAI APIs, FlowiseAI, Pinecone vector DB, NLP, RAG, prompt engineering, agent-based workflows and scikit-learn
- Systems and Engineering: Requirements analysis, system integration, API design, UML modelling, user acceptance testing and technical documentation