# MUHAMMED COLLEY

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## EDUCATION

**MSc Artificial Intelligence -** Northumbria university
09/2024 - 09/2025

**BSc Honours Computing (smart technologies) -** Sheffield Hallam University
09/2020 - 07/2024 | Grade 2:1

## TECHNICAL SKILLS

- Programming**:** Python, SQL
- Machine Learning & AI: Scikit-Learn, TensorFlow, PyTorch
- Data Analysis & Processing: Pandas, NumPy, Matplotlib
- Development & Deployment: Flask, Django, Docker, CI/CD (GitHub actions)
- Software Engineering: Object-Oriented Programming (OOP), Design Patterns, Testing
- Version Control: Git, GitHub
- Others: HTML, CSS, Figma, UI/UX & User-Centred Design

## WORK EXPERIENCE

**SHU Enterprise - Software developer (internship)**
09/2022 – 09/2023

- Developed a Django-based web application for an early-stage EdTech startup, implementing authentication, data models, and CRUD functionality using Python and SQL.
- Worked directly with founders to clarify requirements**,** evaluate technical options, and iterate features based on user and business feedback.
- Used Git and GitHub for version control, documenting design decisions to support maintainability and future development.
- Delivered features under real-world constraints including changing requirements, limited resources, and time pressure.

**Flannels - Sales Assistant**
11/2021 – Present

- Delivered excellent customer service in a high-traffic retail environment, demonstrating strong communication and interpersonal skills.
- Collaborated with diverse team members to meet daily sales targets and ensure smooth store operations.
- Adapted quickly to changing stock, promotions, and customer demands also developed attention to detail and flexibility.
- Maintained product knowledge and used active listening to understand customer needs and provide tailored recommendations.

**Sheffield Hallam Active - Sports Activator**
09/2021 – 07/2022

- Accomplished a 50% increase in session participation, as measured by attendance records, by redesigning *sports activities* to be more inclusive and engaging for students with varied abilities and interests.
- Planned and delivered practical, activity-based sports sessions**,** adapting drills, pacing, and group structures to suit different fitness levels and confidence levels.
- Supported participants through informal check-ins and encouragement during sessions, working closely with staff to improve engagement, retention, and overall experience.
- Gained hands-on experience managing groups, maintaining safety, and creating positive participation environments.

## PROJECTS

**MSc Dissertation Project – AI-Driven Defect Detection in Composite Materials**
*Northumbria University, 2025*

- Reduced manual labelling in industrial defect inspection by designing a semi-supervised pipeline combining K-Means clustering and YOLOv8, resulting in more efficient data usage for limited labelled datasets.
- Validated pseudo-labelling strategy by evaluating clustering quality (Silhouette 0.49, DBI 0.89), improving supervised training effectiveness.
- Built and trained a YOLOv8 object detection baseline, identifying performance bottlenecks caused by noisy labels and limited data, enabling informed model improvement decisions.
- Documented trade-offs between annotation cost, model accuracy, and deployment feasibility**,** supporting practical adoption of the workflow in industrial inspection contexts.

**Student Placement Platform – System analysis & Design with UML (MSc Group Project)**
*Northumbria University, 2025*

- Delivered a complete system specification for a student placement management platform by translating stakeholder needs into clearly defined functional and non-functional requirements within a 5-member team.
- Improved requirement clarity and traceability by conducting stakeholder analysis and mapping business goals to use cases, reducing ambiguity in the proposed system design.
- Produced structured UML models (use case, activity, and class diagrams) to represent system behaviour and architecture in a way suitable for developer handover.
- Evaluated design feasibility and risks by conducting an individual critical reflection covering technical constraints, ethical considerations, and implementation trade-offs.

**Nim Game - Java Application**
*Northumbria University, 2025*

- Built a fully functional Java application with both Swing-based GUI and text-based interfaces by applying object-oriented design principles and modular architecture.
- Improved maintainability and UI responsiveness by implementing the Observer pattern to decouple game logic from interface updates.
- Extended core gameplay functionality by integrating AI opponents, undo operations, and save/load persistence within a single application.
- Increased confidence in software correctness by designing and executing black-box, white-box, and boundary tests with JUnit to validate game logic across edge cases.

**FPL Recommender system - User Research, Intelligent UI & UX Project**
*Northumbria University, 2025*

- Designed an intelligent user interface for a Fantasy Premier League recommender by conducting user research to identify decision-making challenges faced by players and translating insights into user personas and interaction flows.
- Improved usability and decision support by prototyping data-driven UI screens that combined player statistics, recommendations, and visual explanations aligned with user goals.
- Integrated machine learning outputs into the UI to support personalised recommendations while maintaining transparency and user control over final decisions.
- Evaluated user experience and ethical considerations by analysing explainability, fairness, and trust in AI-assisted recommendations, ensuring alignment with responsible AI principles.

## LEADERSHIP & VOLUNTEERING

- Barden Scholar (Northumbria University, 2024/25) - Awarded scholarship for academic excellence and leadership.
- Gold Hallam Award, (Sheffield Hallam University 2024) - Recognized for 50+ hours of volunteering, holding a committee position in a student society, and completing career development workshops.
- Varsity Football Team Captain**:** Led team organisation, match coordination, and on-field leadership.
- Technical Support Volunteer, Masjid imam Malick (Local Mosque): Provided basic IT support, troubleshooting hardware and software issues for community users.

## REFERENCES

Available upon request