

HEET PATEL

Data Science & Machine Learning Engineer

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[Portfolio](#) | [LinkedIn](#) | [GitHub](#)

Award-winning Data Science graduate specialising in machine learning and Python development. Demonstrated expertise in developing AI/ML solutions, with proven ability to reverse-engineer complex algorithms and build scalable data infrastructure. Recognised for mathematical excellence with the Best Mathematics Project Award for dissertation work in audio fingerprinting technology. Proficient in architecting RESTful microservices, implementing deep learning pipelines, and developing data auditing workflows.

KEY ACHIEVEMENTS

Academic Excellence

- **Best Mathematics Project Award**, Nottingham Trent University Department of Mathematics - Awarded for dissertation reverse-engineering Shazam's proprietary audio fingerprinting algorithm using advanced Fourier analysis
- **First Class Honours Graduate** - Achieved the highest classification in BSc Data Science with exceptional performance across machine learning, big data, and statistical analysis modules
- **Student Union Course Representative** - Elected to represent Data Science and Computer Science (w/ Math) cohorts, advocating for curriculum improvements and student interests

Professional Impact

- **Strategic M&A Support** - Served as data advisor during Astute Healthcare's acquisition of DocPharm GmbH, providing critical data insights that influenced executive decision-making
- **Supply Chain Optimisation** - Engineered predictive analytics dashboard monitoring international logistics operations, enabling proactive bottleneck identification

TECHNICAL EXPERTISE

Programming & Frameworks: Python (Advanced), TensorFlow/Keras, FastAPI, Django REST Framework, JavaScript/TypeScript, NextJS, SQL

Machine Learning & AI: Neural Network Architecture, Computer Vision (CNNs), Natural Language Processing, CRISP-DM Methodology

Data Engineering & Analytics: PostgreSQL, Hadoop/MapReduce, Distributed Computing,

Real-time Data Processing, Pandas, NumPy, Matplotlib, Seaborn, Minitab Statistical Analysis

Cloud & DevOps: JWT Authentication, Asynchronous Programming, RESTful API Design, Git Version Control, CI/CD Pipelines (Github Actions)

Business Intelligence: Advanced Excel Dashboards, Market Intelligence Analysis

EDUCATION

BSc Data Science - First Class Honours

Nottingham Trent University | September 2022 - July 2025

Research Projects:

Audio Fingerprinting Algorithm Recreation (Mathematics Prize Winner)

- Reverse-engineered and implemented Shazam's proprietary music recognition system using advanced spectral analysis
- Developed custom signal processing pipelines, achieving sub-8-second audio matching capabilities on a local machine
- Architected a full-stack solution with NextJS frontend and optimised SQL hash storage

- Authored a comprehensive 90-page technical dissertation detailing mathematical foundations

Deep Learning Computer Vision System

- Retrained convolutional neural networks (Resnet50, EfficientNetB0) for the classification of music album artwork
- Achieved ~70% classification accuracy through ensembling modelling.
- Integrated the Spotify Web API with a local SQLite database to create a contextually-aware conversational AI system

Big Data Analytics Platform

- Orchestrated multi-node Hadoop cluster for large-scale vehicular accident analysis
- Implemented MapReduce algorithms for severity-based incident clustering

A-Levels - Biology (A), Chemistry (A), Mathematics (B)

St Albans School | **September 2020 - August 2022**

GCSEs - Biology, Chemistry, Physics, Maths (9), Computer Science, Geography (8)

St Albans School | **September 2012 - August 2020**

PROFESSIONAL EXPERIENCE

Data Analyst Intern

Future Centre Storage & Distribution Ltd | **Aylesbury** | **Summer 2024**

- Architected and deployed a comprehensive real-time analytics dashboard leveraging advanced Excel functionalities to monitor international supply chain operations, enabling proactive identification of bottlenecks
- Cross-functional collaboration with supply chain, procurement, and warehouse operations to reduce fulfilment delays by implementing data-driven management
- Developed automated reporting systems that transformed raw logistics data into actionable intelligence for management decision-making

Data Analyst Intern

Astute Healthcare | **Aylesbury Office** | **Summer 2023**

- Performed advanced market intelligence analysis to evaluate pharmaceutical trends across European markets
- Served as data advisor during the strategic acquisition of DocPharm GmbH, delivering data-driven insights critical to executive decision-making
- Developed a script for data extraction from a Belgian-based SAM (Authentic Source of Medicine) viewing software.
- Designed a German-to-English pharmaceutical database architecture to facilitate in-company product management and information retrieval.

PERSONAL PROJECTS

Routine Grid - Habit Tracking Platform: Production-ready RESTful API ecosystem built with Django REST Framework featuring JWT-based authentication, sophisticated endpoint design patterns, and Pydantic data validation. Currently developing a reactive NextJS frontend with GitHub-inspired calendar visualisation for intuitive habit tracking.

LintData - Automated Data Quality Assurance Framework: Open-source Python library enabling one-command pandas DataFrame validation through custom accessor methods. Implements intelligent anomaly detection algorithms and custom configurations for maintaining data integrity at scale. Automated testing and publishing implemented via GitHub Actions.

Serenity - Community Management System: Intelligent Discord chat traffic controller built with asynchronous Python architecture (Hikari framework) featuring real-time channel monitoring and adaptive rate-limiting controls. Successfully deployed across 50+ servers, processing thousands of messages with SQLite-based configuration persistence.

Reverse Engineer Shazam - Award-Winning Dissertation Project: Recreated Shazam's audio fingerprinting algorithm using advanced Fourier techniques and spectral hashing. Developed with Python, Librosa, and NumPy for signal processing, paired with NextJS frontend for user interaction. Recognised with the departmental Best Mathematics Project Award.

CERTIFICATIONS

- Advanced Excel for Financial Planning & Analysis - LinkedIn Learning
- Python for Quantitative Finance - LinkedIn Learning
- Business Valuation Methodologies - LinkedIn Learning
- Accounting Foundations for Data Professionals - LinkedIn Learning
- Getting Started with Python for Finance - LinkedIn Learning

LANGUAGES

English - C2 Native Proficiency

Gujarati - C2 Native Proficiency

Hindi - B2 Professional Working Proficiency