

# Zhengtao Lyu

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## Profile

Graduate Data Scientist with an MSc in Applied Mathematics from the University of Exeter. Experienced in building end-to-end analytical models and tools, including YOLOv5-based image detection systems and anomaly detection in health data using Isolation Forest. Proficient in Python, R, SQL, and MATLAB, with strong data storytelling, modeling, and real-world problem-solving capabilities.

## Technical Skills

Programming: Python (NumPy, Pandas, scikit-learn), R, MATLAB

Machine Learning: YOLOv5, Isolation Forest, LSTM, GANs, SVM, K-Means

Tools & Frameworks: PyTorch, OpenCV, Jupyter, Git, GitHub

Data Handling: MySQL, SQLite, Excel, EDA, Feature Engineering

Environments: Conda, virtualenv

## Education

**University of Exeter, UK** – *MSc in Applied Mathematics (Data Science & Modelling)*, Dec 2024

**Inner Mongolia University of Science & Technology, China** – *BArch in Architecture*, Jun 2022

## Selected Projects

### Anomaly Detection in Health Monitoring Systems

- Built an Isolation Forest pipeline to classify patient health anomalies in multivariate time-series.
- Improved anomaly detection precision by 14% with PCA and feature engineering.

### YOLOv5 Vision System for Fault Detection

- Created a YOLOv5-based image detection system for identifying engineering defects.
- Achieved 91% mean average precision using OpenCV + PyTorch deployment.

### 2D Heat Conduction Solver

- Developed a finite difference solver for 2D steady-state heat equations in MATLAB.

## **Predator-Prey Simulation**

- Simulated nonlinear predator-prey ecosystems using Markov chains and Monte Carlo in R.

## **Experience**

Data Promotion Analyst Intern – B1TE FMCG Brand, China (Dec 2021 – Apr 2022)

- Coordinated online promotion with MCN agencies, delivered real-time campaign insights.

Architect Assistant – Tiangong Design Institute, China (Feb 2021 – Oct 2021)

- Drafted architectural CAD/BIM designs for large commercial spaces.

Legal Intern – Beijing Normal Law Office (Jan–Mar 2020; Jul–Aug 2020)

- Researched regulations and supported litigation documentation preparation.

## **Languages**

Mandarin (Native), English (Fluent)