Che Cui

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Introduction

I hold a BSc in Data Science and Artificial Intelligence from the Technical University of Madrid. I have developed a strong foundation in programming, mathematics, and statistics, complemented by hands-on experience in both the private and public sectors. To deepen this focus, I decided to pursue an MRes in AI and Machine Learning in Imperial College London, seeking a new environment. I am motivated to continue learning and contributing to the field of artificial intelligence. My research interests are at the intersection of machine learning, computer vision and natural language processing.

Education

Imperial College London September 2025 – Present
MRes AI and Machine Learning *London, UK*

- Modules: Generative AI, Research Tutorial, Simulated Research and Development Project Proposal, Ethics, Fairness, and Explanation in AI among others.
- Individual Research Project: "Unsupervised anomaly detection for cardiac MRI". The project is supervised by Dr. Giacomo Tarroni and co-supervised by Dr. Chen Qin. It is assessed by a poster presentation, a thesis and a subsequent oral presentation (viva) of the written thesis.

Technical University of Madrid (UPM) Sep 2020 - Mar 2025
Bachelor of Data Science and Artificial Intelligence *Madrid, ES*

- Modules: Deep Learning, NLP, Generative AI, Calculus, Linear Algebra, Statistics between others.
- Bachelor thesis: "Diffusion Model Based Brain Tumor Segmentation Enhanced with Inpainting Method" Grade: 10/10.
- The program's duration was extended to the 2024-2025 academic year to allow for the completion of my thesis at home university following an exchange program at TUM.

Technical University of Munich (TUM) Summer Semester 2024
Exchange Study Programme *Munich, GER*

- Modules: Advanced Natural Language Processing, Foundations and Applications of Graph Neural Networks.
- Lab project in Praktikum - Reinforcement Learning and Benchmarking for Modular Robots.

Work Experience

Research Assistant March 2025 – September 2025
Ontology Engineering Group at Technical University of Madrid *Madrid, ES*

- Research assistant to Dr Elvira Amador Domínguez at the Ontology Engineering Group.
- Project:"GAP-KGE: Automatic Template Generation for Reasoning Models over Knowledge Graphs"

Data scientist intern October 2023 – January 2024
Renta 4 investment banking *Madrid, ES*

- Worked in the Digital Innovation department to develop and implement Machine Learning solutions.
- Projects: Investment Fund Recommender System & Automated sentiment Analysis and Report Generation Using NLP methods.

Research Projects

Unsupervised anomaly detection for cardiac MRI | *Imperial College London* 2025 - 2026

- Supervised by Dr. Giacomo Tarroni and co-supervised by Dr. Chen Qin.
- Literature review on state-of-the-art unsupervised anomaly detection methods and test generative and self-supervised approaches on public datasets, enabling detection of structural anomalies (e.g. hypertrophic cardiomyopathy) and motion abnormalities without labelled pathology.
- Evaluation, poster preparation and final thesis drafting follow, culminating in thesis submission by end-August 2026.

GAP-KGE | *Ontology Engineering Group* 2025

- Worked closely with the supervisor on a project for information extraction from scientific papers using ML and LLM-based models to generate templates for Knowledge Graph Embedding papers.
- Literature review on state-of-the-art information extraction methods and set up of a GitHub repository and pipeline.

Diffusion Model Based Brain Tumor Segmentation Enhanced with Inpainting Method | *BSc thesis* 2025

- Worked in diffusion models(DDPM and DDIM), also applied RePaint inpainting method, for image generation but focused on the image segmentation task for brain tumors using 2020 Brats Dataset. Link to the project here.
- Literature review on state-of-the-art papers in image generation and inpainting methods for diffusion models.
- Set up of a GitHub repository and pipeline.
- Began preparation in a paper publication.

Other Relevant Projects

CONSENSE | *Practical Lab Project at TUM* 2024

- Project full name is "CONSENSE: Optimal Path Planning and Collision Avoidance for Robots using Sensor Fusion". Collaborated in a 3 people team to develop a hardware and software selection for a industrial robot to work in concrete removal task. Developed a simulation environment in ROS2 and Gazebo to model and test the robot's functionality.
- Literature review on sensor fusion and validated sensor performance in harsh working conditions.
- Research report writing and presented the project findings in a poster session at a open TUM event in front of supervisors and PhD students.

Water Mark Remover | *4^{th} year team project* 2023

- Collaborated in a 5-person team to develop a watermark removal system using a UNet-based GAN with a final project and results presentation.

Stock Prediction via News Analysis | *3^{rd} year project* 2023

- Worked in stock price prediction project, goal was to predict the French CAC 40 stock market by integrating sentiment analysis from French news data with time series forecasting of historical stock prices.

Competitions

Competitive programming: 2^{o} place in the Nanyang Technological University Singapore - Imperial College Learning Analytics Hackathon 2025 at Imperial College London.
Bachelor thesis:Best Thesis with Impact 2024-2025 award.
Other: Winner of multiple math contests from primary to high school educations.

Technical Skills

Programming Languages: Python, C, R, Matlab, SQL & No-SQL (MongoDB, Neo4j, Cassandra).
Libraries: Keras, TensorFlow, Pytorch, NumPy, SciPy, Pandas, Matplotlib.
Relevant Programming Skills: LaTeX, Spark, Docker, GitHub, AWS certificate.
Languages: Spanish (Native), Chinese (Native), English (Cambridge C2 Proficiency), French (Basic proficiency).

Interest

Societies: Active member of the Department of Computing Society attending industry talks and regular member of the Cross Country & Athletics.
Volunteering: Acted as Degree Vice-Representative for the students in the Data Science and Artificial Intelligence bachelor program at Technical University of Madrid.

References available on request.