Martin He

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PROFILE

Currently a second-year Business Analytics and Finance student at Bayes Business School, I combine the mathematical rigour of a Physics foundation at Imperial College London with advanced expertise in predictive modelling. My experience spans the development of NLP and semantic search architectures, alongside active research in computer vision at City Optimise Society. With proficiency in Python, SQL, and R, I specialise in translating complex, high-dimensional data into actionable statistical insights, ensuring that scalable AI solutions are grounded in methodological integrity and business relevance.

EDUCATION

Bayes Business School 2024 – Present
BSc in Business Analytics with Finance London, UK

- A course covering supervised and unsupervised ML, deep-learning, AI-powered analytics and financial modelling. Emphasis on using financial and business analytical knowledge to maximise business potential through data-driven solutions.
- ***Relevant Modules:*** Financial Econometrics (98%), Mathematics for BA (88%), Finance & Investment (80%), Supervised ML (83%), Deep Learning (83%), Applied NLP (76%), Business Economics (75%), Data Wrangling & EDA (80%), Unsupervised ML (74%), Scalable Analytics Methods (88%).

Foreign Studies & Travel 2023 – 2024
Beijing Foreign Studies University, 北京外国语大学 Beijing, PRC

- Studied Mandarin at Beijing Foreign Studies University for three months, enhancing cross-cultural communication skills and adaptability.
- Worked as an English tutor while travelling in China, supporting learners through clear communication and tailored guidance.

Imperial College London 2021 – 2023
BSc in Theoretical Physics (obtained Diploma in HE) South Kensington, UK

- ***Relevant Modules:*** Statistics of Measurement (76%), Mathematical Analysis (75%), Practical Physics & Computing (71%), Vector Fields & Electromagnetism (78%), Oscillations & Waves (73%), Quantum Physics, Mechanics & Relativity.

Hampton Court House / Tiffin School 2014 – 2021
A Levels: Mathematics, Further Mathematics, Chemistry, Physics (and AS Chinese) Hampton/Kingston-upon-Thames, UK

- 4 A*s at A Level and 5 As at AS Level. 14 Level 9s at GCSE (equivalent A**). DofE Silver. Grade 8 Distinction.

SKILLS & KNOWLEDGE

- **Programming:** Python (NumPy, Pandas, SciPy, Matplotlib, Seaborn, PyTorch, TensorFlow, Scikit-Learn, FastAPI, StatsModels, Spacy, NLTK, PySpark, Polars, OpenCV, LightGBM, XGBoost, Sympy), R (GGPlot, Tidyverse, Tidyr, Tidymodels, Dplyr), HTML5, CSS (MUI, Bootstrap), JavaScript (JQuery, React), Git.
- **Databases:** SQL, MySQL (Workbench), PostgreSQL, MongoDB.
- **Tools:** GitHub, Perforce, Power BI, VSCode, LaTeX, Tableau (Desktop, Prep Builder), Docker (File, Compose), Jira, Confluence, EViews.
- **Business & Finance:** Financial Mathematics, Portfolio Theory, Investment Valuation, Financial Statements, Modelling, Fintech, Regression Analysis, Derivatives, Equities, FX, Bonds, Applied NLP, Supervised/Unsupervised ML, Deep Learning.
- **Soft Skills & Others:** Report Writing, Presentations, Time Management, Critical Thinking, Teamwork, Customer Interaction, Organisation, Collaboration, Written Communication, Agile Methodology, Test-Driven Development, Unit-Testing, Waterfall Model.
- **Languages:** English (Native), French (Advanced, C1), Chinese (Advanced, HSK5), Japanese (Intermediate, B1+), Italian (Intermediate, B1), Latin (GCSE), Classical Greek (GCSE), Spanish (Beginner, late A1), Norwegian (Beginner, A1), Dutch (Beginner, A1).

EXPERIENCE

Perforce Software Jul 2025 – Sep 2025
Summer Internship (Supervised by Perforce Search Team)

- Designed and prototyped a semantic search engine using Python, NLP, BERT and FastAPI.
- Carried out vector-based retrieval for both sentence and image search.
- Built and containerised the system using Docker for reproducibility.
- Used FastAPI-based micro-service as the interface layer.
- Completed performance evaluation between vector-based search and traditional keyword search.
- Utilised Perforce source control, attended Agile meetings, and authored reports for Confluence.

Freelance, Web Design Jun 2015 – Present
Website creation for personal use, as well as professional use cases.

- Designed the website for Club 244, an Angolan networking group in the UK.
- Designed the website for my local table-tennis club, Alexandra Table Tennis, complete with functioning databases of match scores, handicap calculator, upcoming events, etc. Please note that the site is now defunct.
- Designed various personal sites on my domain which can be found here.
- Created the website for UKCCEC (UK Chinese Culture Education Centre), a UK-based educational organisation focused on promoting Chinese language and culture exchange.
- Created the form website at Tiffin (ALKSITE), garnering over 1,000,000 page views, and 100,000 unique visitors over the five-year period the website was active. Used for recording homework and forums (prior to the introduction of Google Classroom).

Freelance, Private Tuition Jun 2019 – Jul 2024
Tutoring in Maths, Physics, Classics, and Music. UCAS-related preparation.

- Designed learning resources, based on Socratic Method for tutoring sessions.
- Tutored students have gone on to study at St. Andrews, UCL, University of Cambridge, KCL, etc.

Sales Associate Feb 2020 – Aug 2021
Adult Department, and Stock-Room.

INTERESTS & AWARDS

- **Recipient of Bayes Academic Scholarship** - Awarded to top 10%.
- **Bayes, Business Analytics - Data Olympics Winner 2025**, with £400 cash prize.
- **Member of City Optimise Society, Bayes AirQ (Quant Society)**.
- **Personal:** Self-starter and team player; enjoy piano, gym, long-distance cycling, and running. I am interested in typography.

PROJECTS

- **Altruist: The "Bloomberg Terminal for Charities"**
  Apr 2026 link available upon request
  Associated with Bayes Business School
  Built a responsive React web-app prototype and Firebase back-end during the Innovate Hackathon in a team of 3, ultimately winning the Hackathon with our presentation and live demo.
- **Spotify Music Recommendation System**
  Mar 2026 – Apr 2026 link
  Associated with Bayes Business School
  Building a recommendation system based on Spotify data, augmented with MP3 30-second previews, album art, and lyrics. Employed PyTorch to create CNN-based, and transformer-based models, and a final multi-modal architecture.
- **CNNs, Transformers, and ResNets on CIFAR-100**
  Feb 2026 – Mar 2026 link available upon request
  Associated with Bayes Business School
  Attained 90.1% accuracy on test set of 32 by 32 images, based on CIFAR-100. Tested models include CNN-based, ResNet-based, transformer-based, and MLP-based architectures, with ResNet-based being the final choice.
- **Glossika - a SRS system** link
  Dec 2025 – Present
  Created a SRS-based language learning web-app. Simply upload a CSV or TSV file of the words or sentences you want to learn. Built using React and Vite front-end, and TypeScript. Aiming to implement sentence-based courses, as well.
- **Optiver: Ready, Trader, Go** link
  Mar 2023 – Mar 2023
  Associated with Imperial College London
  Trading competition with £30,000 prize, which we competed in three rounds over a two-week time-frame. In Python, we implemented trading techniques using arbitrage and market-making and hedge orders, in order to determine optimal trades. Later, after sorting out our arbitrage fill and kill trades, we made volatility calculations in order to determine when to relinquish good-for-day-market-making in favour of better trades based on tick updates. Efforts were made into exploring the time series data using machine learning (in particular, generational neural networks) to predict the movement of the market, with the intention of implementing the Black Scholes model as well as Ito Calculus. We finished in third position in our first match.
- **IC Hack 2023 - Honorary Mention** link
  Feb 2023 – Feb 2023
  Associated with Imperial College London
  Imperial College Hackathon. Working in a team of six to build a mobile-responsive web-app to handle the organisation and planning of house parties, distribution of money, to facilitate the sharing of tasty photos, and the safe return of party-goers. Honorary mention in the Sustainability category. Made use of Google Maps API, Spotify API, as well as Ruby.
- **Researching Protein Variant Thermostability** link
  Oct 2022 – Jan 2023
  Finished with a Spearman's rank of 0.545. Participation in active research on the thermostability of enzyme variants, working in a team of 6. Computational protein stability prediction remains a great challenge to perform accurately, in spite of recent breakthroughs, such as with AlphaFold 2. In collaboration with Novozymes, the world's leading biotech powerhouse, by determining the thermostability of enzymes, this

can help save energy and reduce waste, thus reducing Novozymes' environmental impact. By developing a model to predict and rank the thermostability of enzyme variants based on experimental melting temperature data, this novel approach can help design useful proteins at a lower cost, and tackle the fundamental problem of improving protein stability.

- **Construction of Rudimentary Scanning Confocal Laser Microscope** link available upon request
  Apr 2022 – Jun 2022
  Associated with Imperial College London
  Received an award from the Physics Department, with £150-worth of Amazon vouchers. Carried out the construction of a rudimentary confocal laser scanning microscope, on a budget of £200, utilising the open-source microscopy project provided by OpenFlexure to create a 3D-printed automated flexure mechanism stage. Interfaced through an Arduino and controlled from a Raspberry Pi using a custom-made modified Resulson distribution. Attained micrometer-level precision, and produced early-stage 3D height maps, as compared with micrometer gauges to measure the thicknesses of various objects, with the hope of using 3D profilometry to help calibrate and assess the accuracy.

- **Statistical Analysis of LHC Data** link available upon request
  Apr 2022 – May 2022
  Associated with Imperial College London
  Performed the statistical analysis of LHC data by detecting excess back-to-back scattering of photon pairs in the 125GeV region in order to conclude the existence of the Higgs' boson, using Python and C++ libraries.

- **Royana Font** link
  Jun 2017
  Royana is the culmination of a week-long endeavour diving into the world of typography, created using FontForge and released for free on Dafont in 2017. It has since been downloaded over 10,000 times across all platforms, and has been used commercially in books, online stores, packaging galore. The font is available in: Latin Extended, Cryllic, Greek Extended, Arabic, Hindi, Hebrew, Georgian.

VOLUNTEERING

Musician Oct 2019 – Apr 2021
Hampton Court House — Arts and Culture

- Led weekly teaching sessions for GCSE Mathematics students, providing academic support and helping younger pupils build confidence.
- Helped organise school music events, including performances for the incoming Headmaster's inaugural speech.
- Provided musical entertainment for school events, contributing to a welcoming and engaging community atmosphere.
- Supported both educational and extracurricular activities through reliable weekly involvement and collaboration with staff and students.

Skills: Musical performance, event support, mentoring, teaching, teamwork.

GCSE Revision Companion Project available upon request Jun 2018 – May 2019
Educational Resource Initiative — Social Mobility

- Developed a free online companion resource for GCSE students, designed to improve access to high-quality support for students aiming for 9s across subjects. Focused on addressing social mobility barriers by making strong, clearly-structured revision materials available to students regardless of background, or socio-economic barriers.
- Created materials that prioritised deep understanding over rote memorisation, helping learners build confidence with stronger connections across topics. Contributed to wider educational access through a resource adopted within a top-performing UK grammar school and made freely available online. (This resulted in a huge increase on the league tables.)

Skills: Educational content design, widening participation, communication, resource development, accessibility.

Classics Department Educational Support link Apr 2016 – Apr 2019
Educational provision for Latin and Classical Greek GCSE students — Education

- Created educational resources to support teaching in Latin and Classical Greek GCSEs across both Language and Literature components.
- Developed materials designed to improve subject understanding, revision, and confidence for younger students.
- Supported weekly lunchtime sessions, helping students with classwork, exam preparation, and targeted academic guidance.
- Contributed to a supportive learning environment by explaining difficult concepts clearly and encouraging continued progress.

Skills: Microsoft Office, resource creation, mentoring, tutoring, communication, empathy.

OTHER ROLES

Contributor Jan 2026 – present
Acturial, Insurance, Risk, Quants (AirQ) – Bayes Business School

- Contributor to the Quants division.
- Wrote articles on the climate-related impacts on Finance.

ML Researcher May 2025 – present
City Optimise Society – Bayes Business School

- Contributor to various inter-University projects and competitions.
- Implementations in PyTorch, Tensorflow, and OpenCV.

Representative May 2025 – present
Imperial Data Science Society – Bayes Business School

- Represented Imperial College in various competitions and hackathons.
- Attended weekly data science lectures and sessions, relating to Machine Learning, Data Science, and other areas.
- Attended networking events run by ICDataSoc.

Various Roles Jan 2016 – Jun 2019
Tiffin School

- Represented Tiffin in inter-school Maths competitions.
- Won the inter-school literary competition as part of the Tiffin team.
- Represented Drake House in diverse areas, such as: public speaking, maths, singing, general knowledge, bridge, literary quiz, house run, table tennis, etc. Won the House award in 2017.
- Represented Tiffin in other areas (e.g. open evenings, inter-school human rights competition) to high commendation.

REFERENCES

References are available upon request.