Marco Lam

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Introduction

As an Irish MSc student in Computer Science with a mathematics undergraduate background, I enjoy tackling difficult problems. I have industry experience as a Data Engineer. I am passionate in data-driven technology, specifically in Computer Vision and Deep Learning models. I want to use my creativity and problem solving abilities to be at the forefront of new innovation.

Education

University of Padova *Padova, Italy*

MSc Computer Science *Oct 2022 - July 2024*

- **Grade:** Exp. 110/110 Laude, equiv. to 1st Class Honours
- **Thesis** Algorithmic Approach to 15 Minute City
- **Courses:** Concurrency & Distribution, Functional Languages, Deep Learning, Computer Vision, Advanced Algorithms, Data Mining, Mobile Programming, Big Data Computing

University College Dublin *Dublin, Ireland*

MSc Data & Computational Science - GPA:3.99 *Sept 2019 - Sept 2020*

- **Grade:** 1st Class Honours
- **Courses:** Data Programming with C, R & Python, Statistical Network Analysis, High Performance Computing, Bayesian Analysis, Stochastic Models, Machine Learning, Numerical Algorithms

BSc Financial Mathematics - GPA: 3.45 *Sept 2015 - May 2019*

- **Grade:** Upper 2nd Class (2.1) Honours
- **Research Internship:** Latent Position Models
- **Courses:** Cryptography, Time Series, Bayesian Models, Partial Differential Equations, Linear Models, Complex Analysis, Groups, Rings and Fields, Metric Spaces

Thesis

Algorithmic Approach to 15 Minute City

MSc Thesis - github.com/marcohoucheng/Algorithmic-Approach-to-15-Minute-City *Jan 2024 - Jul 2024*

- Provide a generalised approach to determine the "15-Minute City" in any given map or city.
- Aim to design an efficient algorithm to improve on the existing solutions in literature.
- Adapt and modify popular graph search algorithms to minimise complexity such as Dijkstra's and Johnson's algorithm.
- The proposed solution will be implemented in Rust as a showcase to the theory.
- **Technical Skills:** Rust, Python, Graph Search

Skills

Programming Python, Rust, C, C++, F#, Java, Swift, Go, Javascript, SQL, VBA, R, Matlab

Frameworks Pytorch, Tensorflow, PySpark, AWS

Languages English (Fluent), Cantonese Chinese (Fluent), Mandarin Chinese (Fluent) and Italian (A1).

Work Experience

Allied Irish Banks (AIB) *Dublin, Ireland*

Data Engineer *Sept 2020 - Sept 2022*

- Developed and managed Teradata Data Warehouse along with Microsoft SQL Server databases.
- Automated SQL ETL pipelines to generate risk assessments and regulatory reports for business teams.
- Performed A/B testing, investigated and resolved any data quality issues.
- Replicated errors found in workflows through SQL Server Management Studio and pivot tables.
- Created, reviewed and updated procedure documents for future references and provided training to new members.

University College Dublin *Dublin, Ireland*

Research Intern - github.com/marcohoucheng/Research-in-Latent-Position-Models *June 2019 - Aug 2019*

- Research project focused on Latent Position Models supervised by Dr. Riccardo Rastelli.
- Simulated social-connection models on R using Monte-Carlo Markov Chains.
- Applied Game Theory and Bayes Risks Theory to compare and optimise statistical models.
- Revised and improved algorithms to boost performance and reduce computational costs to optimisation tools.

Private Tutor *Dublin, Ireland*

Leaving Certificate Tutor *Sept 2017 - June 2019*

- Tutored for both ordinary and higher level Leaving Certificate Mathematics.
- Taught higher level Applied Mathematics as an extra subject outside of school.
- Identified the needs of the students and developed academic strategies.
- Prepared weekly plans and materials and communicated with parents to check in on the students' progress.

Projects

Brain Tumour Segmentation Prediction

github.com/marcohoucheng/Brain-Tumor-Segmentation-with-Computer-Vision *Feb 2024 - Apr 2024*

- A pipeline computer vision deep learning model with a Convolutional-Autoencoder and a U-Net model.
- Identify the region and segmentation of brain tumours through MRI scans.
- Achieved a test accuracy of 98%.
- **Technical Skills:** Python with Pytorch, cv2, pandas, multiprocessing libraries

ML Interpreter

github.com/marcohoucheng/ML-Interpreter *Oct 2022 - Jan 2023*

- An interpreter for a ML functional language following theoretical typing and evaluation rules.
- Implemented with a type inference mechanism to ensure absolute type safety within expressions.
- Developed comprehensive understanding of the functioning of programming language compilers.
- **Technical Skills:** F#, functional languages

Gran Turismo 7 Price Tracker

github.com/marcohoucheng/Gran-Turismo-7-Price-Tracker *Dec 2023 - Mar 2024*

- Aimed to create a solution without the requirement of creating accounts on existing services.
- Automated email service to notify dynamic in-game information updates in HTML format.
- Streamlined process to create and update local databases with a scheduled web-scraper.
- **Technical Skills:** Python with pandas, urllib, smtplib, ssl and more

Computer Vision and Deep Learning Projects

github.com/marcohoucheng/Computer-Vision-and-Deep-Learning *Aug 2023 - Dec 2024*

- A series of Python Notebooks showcasing studies of various computer vision and deep learning topics.
- Models implemented including SIFT, Bag of Words, CNN, Recurrent Neural Networks, LSTM, GRU, Transformers and more.
- Utilising pre-trained models such as AlexNet, GoogLeNet and ResNet.
- **Technical Skills:** Python with Pytorch, pandas, cv2 and more

Academic Achievements

Scholarship, Education and Youth Affairs Bureau Macau	2016,2018
2nd in Mathematical Olympiad Contest at Maynooth University	2015
All Ireland Linguistics Olympiad Final Competition at Dublin City University	2015
Irish Applied Mathematics Team Quiz National Final	2014

Certificates

Amazon AWS Certified Cloud Practitioner	2022
Bloomberg Market Concept	2018

Interests

Outdoor activities Causal tennis player, I also enjoy cycling and hiking

Motor Racing I love the racing and the engineering development of different categories including Formula 1 and WEC

Technology Interested in the latest technology development especially in computer hardware and OSes