MARIAN CHEN

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EDUCATION

BSc Data Science & Artificial Intelligence, Maastricht University, The Netherlands — Expected 2024
Teaching Assistant for Discrete Mathematics, Ambassador for Prospective Students, Mentor for First-Year Students.
Relevant Courses: Graph Theory; Linear Programming; Machine Learning; Theoretical Computer Science
Thesis: TBD
Awards: Nutanix Advancing Women in Technology Scholarship 2023 (1 of 10 recipients)
GPA: 9.04/10.0 (NL) | 4.0 (US), Unranked

Short Academic Program in Artificial Intelligence & Machine Learning, University of Oxford, UK — 2023
Relevant Topics: Generative Models, Reinforcement Learning, Graph Neural Networks
Grade: A+

BSc Business & Economics, Vienna University of Economics & Business, Austria — 2020-2021
GPA: 1.23/5.0 (AT) | 4.0 (US), Ranked 1st of 237 in April 2021

SKILLS

Programming	Python, Java, SQL, R, MATLAB, C, C++
Languages	English (Native), German (Fluent), Spanish (Fluent), Mandarin (Fluent)
Tools	PyTorch, NumPy, Matplotlib, OR-Tools, NetworkX, Gym, Pandas
Soft Skills	Problem-Solving, (Intercultural) Communication, Delegation, Leadership
Academic Interests	Combinatorial Optimization, Graph Neural Networks, Deep Reinforcement Learning

WORK EXPERIENCE

Research Intern — Apr 2023 - Present
Aucos AG — *Aachen, DE*
Skills: OR-Tools, Constraint Programming, Computer Vision, Transfer Learning, Depth Estimation, Object Detection

- Developed a constraint optimization model to improve packing processes in manufacturing centers.
- Programmed software for depth estimation, multi-camera multi-object tracking, and object detection.

Data Analytics Intern — Sep 2022 - Feb 2023
HBI Bisscheroux BV — *Geleen, NL*
Skills: Pandas, PowerBI, Data Visualization, Dashboarding, Data Analytics, Anomaly Detection

- Developed a dashboard for monitoring room quality and device readings; includes a mobile extension.
- Implemented an anomaly detection pipeline for hardware failure; discovered 3 malfunctions within 2 days.
- Devised an ETL pipeline, data dictionary, and data governance framework for AWS data lakes.

International Relations Intern — Apr 2021 - Aug 2021
Taipei City Mayor's Office of External Affairs — *Taipei, TW*

- Managed the communications channel with delegates from 80 foreign embassies/companies in Taipei City.
- Published social media posts in English, Mandarin, German, and Spanish for the mayor and deputy mayors.
- Organized meeting agendas and collaborations with 3 sister cities.

RESEARCH PROJECTS

Category Prediction in OGBN-Products Dataset — *PyTorch Geometric, Graph Convolutional Networks*
Implemented a graph convolutional network (GCN) to predict the category of a product in Amazon's product co-purchasing network. Trained on a subgraph with 100,000 nodes and achieved an accuracy of 91%.

REINFORCE Algorithm for Continuous Cart Pole Environment — *Reinforcement Learning, Gym, PyTorch*
Deployed the REINFORCE algorithm with target and policy networks such that the agent learned to strategically accelerate and reach a goal state on a continuous sinusoidal hill. The agent solved the task every five attempts.

Deep Q-Learning for Frozen Lake Environment — *Reinforcement Learning, Gym, PyTorch*
Trained an agent to reach the goal state in the maximal, 8x8 slippery (stochastic) environment using deep Q-learning. The agent learned to complete the task with 100% accuracy after approximately 200 iterations.

Generative Adversarial Network for Face Generation — *Generative Adversarial Networks, PyTorch*
Developed a generative adversarial network (GAN) that generated new faces after training on a dataset of characters from *The Simpsons*.

Autoencoders for CIFAR10 Recoloring — *Autoencoders, U-Nets, Convolutional Neural Networks, PyTorch*
Implemented an autoencoder and U-net that recolored grayscale-converted images from the CIFAR10 dataset. Minimized average loss to approximately 0.01.

Multi-Modal Digital Assistant — *Computer Vision, Natural Language Processing, JavaFX*
Collaborated with 5 teammates to create a multi-modal digital assistant that launched the GUI and addressed the user upon face detection and recognition. Implemented the program's response to text inputs through CFG, CYK, NER, LSTM, and BERT. Extended the application with Google and OpenAI API, and increased usability with hand gesture commands.

3D Bounded Knapsack Problem with Polyominoes — *Knapsack Optimization, Genetic Algorithm, JavaFX*
Coordinated with 6 teammates to develop a recursive algorithm that provided exact cover solutions to a 2D grid, given the dimensions and available pieces as input. Adapted the program to solve knapsack problems in a bounded 3D space visualized with JavaFX. Extended the application to a Pentris game and trained a bot that outperformed human players using genetic algorithms.

EXTRACURRICULAR ACTIVITIES

Faculty of Science & Engineering **Student Council Chair & Student Assessor** — Served two years as one of two student members on the Faculty Board alongside the Dean and Director. Represented 3,200+ students from 12 study programs and directed communication between 36 student representatives from 8 representational bodies of the faculty. Organized and chaired monthly Student Council meetings. Served as the project manager and co-head organizer of a faculty-wide gala organized within 3 months with 730 guests, a €25k budget, and €6k in profit. Delegated and launched student representation infographics, increasing student turnout in elections by 21%.

Science & Engineering Association Limburg **Internal Commissioner & Co-Founder** — Served one year as a board member of the faculty-wide umbrella study association and as a liasion for 6 program-level study associations. Directed the Career Exploration Series that connected 50 participants with industry experts and academics.

REFERENCES

Prof. Dr. Steven Kelk | **Associate Professor at Maastricht University**
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Prof. Dr. Ralf Peeters | **Full Professor at Maastricht University**
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Prof. Dr. Barbara Franci | **Assistant Professor at Maastricht University**
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Ana Deligny, M.Sc. | **DPhil Candidate at Oxford Robotics Institute**
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