Michael Chen

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Education

University of California, San Diego   San Diego, CA
Bachelor of Science in Data Science   (Expected) June 2028

Skills

Machine Learning:	NLP, Neural Networks, Transformers, LLMs, model evaluation, PyTorch, scikit-learn
Data Science:	SQL, Pandas, NumPy, data visualization, statistical analysis, econometrics, causal inference
Software Development:	Python, Javascript, AWS, Git, React, Flask, Django, REST API, Docker

Publications

Machine Learning

M. K. Chen, X. Zhang, J. Huang, and D. Tao. Improving large language models with concept-aware fine-tuning
Under review

M. K. Chen, X. Zhang and D. Tao. JustLogic: A Comprehensive Benchmark for Evaluating Deductive Reasoning in Large Language Models *Under review*

M. K. Chen. A Comparative Study of Neurosymbolic AI Approaches to Interpretable Logical Reasoning. *19th Conference on Neurosymbolic Learning and Reasoning (NeSy 2025)*

H. Yao, J. Huang, Y. Qiu, **M. K. Chen**...*(7 others)*... D. Tao. MMReason: An Open-Ended Multi-Modal Multi-Step Reasoning Benchmark for MLLMs Toward AGI. *International Conference on Computer Vision (ICCV 2025)*

Data Science & Management Information Systems

M. K. Chen, S. Zhao, C. Borcea and Y. Chen. A Field Study on the Impact of The Counter Ad-Blocking Wall Strategy on User Engagement. *Decision Support Systems, 198, 114525 (2025).*

S. Zhao, **M. K. Chen**, C. Borcea, Y. Chen. Personalized Dynamic Counter Ad-Blocking Using Deep Learning. *IEEE Transactions on Knowledge and Data Engineering 35.8 (2022): 8358-8371.*

Research Experience

Nanyang Technological University (Under Prof. Dacheng Tao & Dr. Xikun Zhang)   Singapore
Machine Learning Research Intern   Aug 2024 - Aug 2025

- Developed a novel Transformer architecture for better LLM fine-tuning via multi-token prediction. By enhancing conceptual understanding, CAFT achieved performance gains of up to 9.2% across various applications, including de novo protein design, molecular generation, and coding.
- Conducted an analysis which showed that existing logical reasoning benchmarks are biased towards models with extensive prior knowledge. Created JustLogic, the most reliable benchmark for evaluating LLMs' deductive reasoning abilities.

Stanford University (Under Prof. Stefano Ermon & Dr. Felix Petersen)   Palo Alto, CA
Machine Learning Research Intern   Aug 2024 - Mar 2025

- Conducted experiments to improve neural networks based on differentiable logic gates. Explored various formulations of real-valued logics and their effectiveness in neural networks.
- Helped create a modified Adam optimizer that is specifically tailored toward networks using real-valued logic

New Jersey Institute of Technology (Under Prof. Cristian Borcea & Prof. Yi Chen)   Newark, NJ
Business Data Science Research Intern   Nov 2020 - Dec 2023

- Conducted a large-scale online randomized field experiment with Forbes Media on counter ad-blocking, involving 252,483 users across 11 weeks.
- Executed various econometrics and causal inference methods, including difference-in-differences (DID), robustness checks, user matching, and data analysis (Gini coefficient and Lorenz curves)
- Helped online publishers like Forbes make editorial decisions by understanding how counter ad-blocking strategies affect reader engagement. Published in a Q1 journal in management information systems as the 1st author.

Professional Experience

AI Singapore (National Research Institute)   Singapore
Machine Learning Engineer Intern   Jun 2020 - Jan 2021

- Served as the lead developer for building MenuCarlo, a web app for visualizing restaurants' historical transactions to help restaurants improve profitability.
- Performed exploratory data analysis and designed a dashboard for data visualization with ChartistJS
- The app was deployed at 3 restaurants, with the support of Temasek Polytechnic.

Psion Insights (Enterprise AI Startup)   Singapore
Data Science Intern   Jul 2020 - Jan 2021

- Trained a risk classification model with Keras to categorize existing risks into relevant types, thus completely automating this step of a risk manager's workflow
- Implemented fuzzy matching algorithm using NLP-based KNN models to recommend controls for newly-added company risks, allowing risk management teams to make more accurate decisions
- Developed REST APIs and a simple UI for the above ML/AI models using Flask and Heroku
- Demoed to various executives at Fortune 500 companies in risk management teams

Entrepreneurship & Leadership Experience

RoadMaple   https://roadmaple.com
Co-Founder & Chief Product Officer   Sept 2021 - Dec 2022

- Built an online platform (using React) that provides roadmaps, resources, and mentorship for youths to learn tech skills
- Gained 2.6k users and 30+ partnering organizations & experts in 6 months through digital marketing and SEO
- Awarded a government grant of $20,000 USD from the National Youth Council

EchoClass   https://www.echoclass.com
Founder   May 2021 - Dec 2023

- Built an open-source learning management system (LMS) tailored for quick setup and better student engagement through gamification
- Used by 5+ coding instructors & 100+ students. Led a team of 4 developers
- Received $5400 USD in corporate sponsorship from Tinkertanker, a prominent code education company in Singapore

Certifications

Certified Associate in Project Management (CAPM)   Project Management Institute
Project management fundamentals, predictive methodologies, agile principles, business analysis   July 2024

AWS Certified Cloud Practitioner   Amazon Web Services
Foundational knowledge of AWS cloud services and cloud computing   July 2024

Mathematics for Machine Learning   Imperial College London
Linear algebra, multivariate calculus, and PCA   Apr 2023

Neuro-Symbolic AI Essentials   IBM Research
Learned to create, infer, and interpret Logical Neural Network (LNN) models   Feb 2023

Military Service

Singapore Armed Forces: Medical Response Force
Combat Medic   Jan 2023 - Nov 2024

- An elite medical force trained to support Singapore's special forces and the general public, including in Chemical, Biological, Radiological, and Explosive (CBRE) environments
- Trained as an Emergency Medical Technician (EMT), capable of providing medical care in an ambulance setting.
- Achieved 2 awards: (1) Outstanding Trainee Award, (2) Best Shot Award
- Volunteered to build and maintain the unit's Telegram bot for tracking our soldiers' training programme, which helped reduce administrative load on commanders