# World leading AI and ML expert

1. Over the past 20 years, been extensively involved in research, includes theory and applications of AI and ML. I have collaborated with top scholars from prestigious institutions such as Oxford, Cambridge, and Imperial College, co-authoring many papers.
2. Previously in Australia, led a large-scale machine learning research and industry project team consisting of 30 individuals.
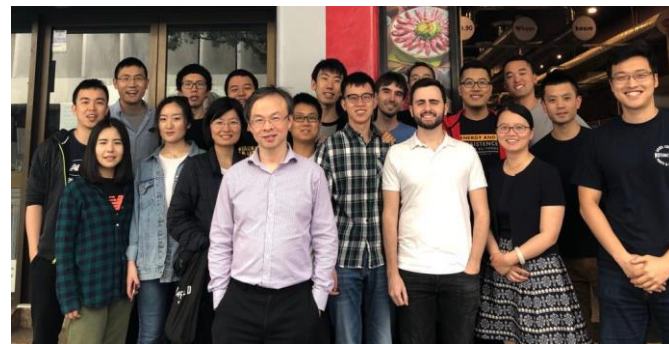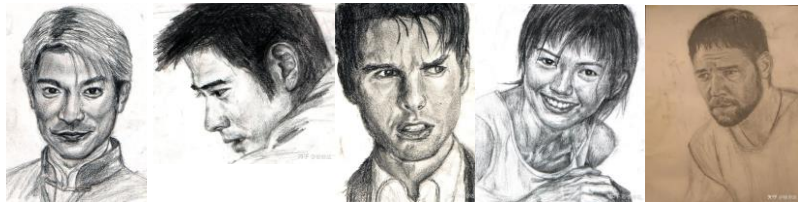
Hong Kong ⬅ **Industry collaboration** ➡ **Australia**

1. AI entrepreneur

as an artist

1. led and delivered over 20 ML/AI research projects in various fields such as finance, government, transportation, utilities, e-commerce, law, and agriculture. These projects have helped businesses address numerous real-world data science challenges.

2. established a team that specializes in providing customized AI courses for enterprises, catering to their specific needs.

3. played a key role in shaping AI standards: as head of the Australian delegation to the ISO/JTC-1 SC 42 Artificial Intelligence Plenary.

4. Prior to my academic career, gained extensive industry experience working for IBM Australia and Lucent Technologies.

He is also as a ML community leader

established an international AI Meetup franchise with over 5,600 members from various locations including Sydney, Melbourne, Hong Kong, and Athens.
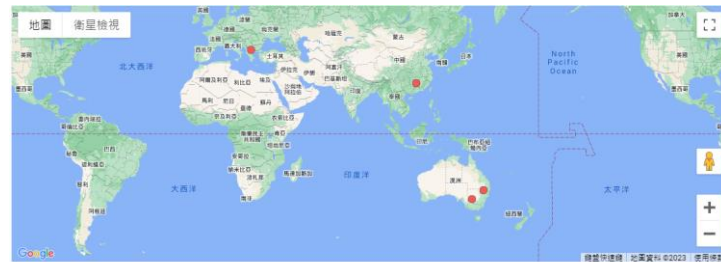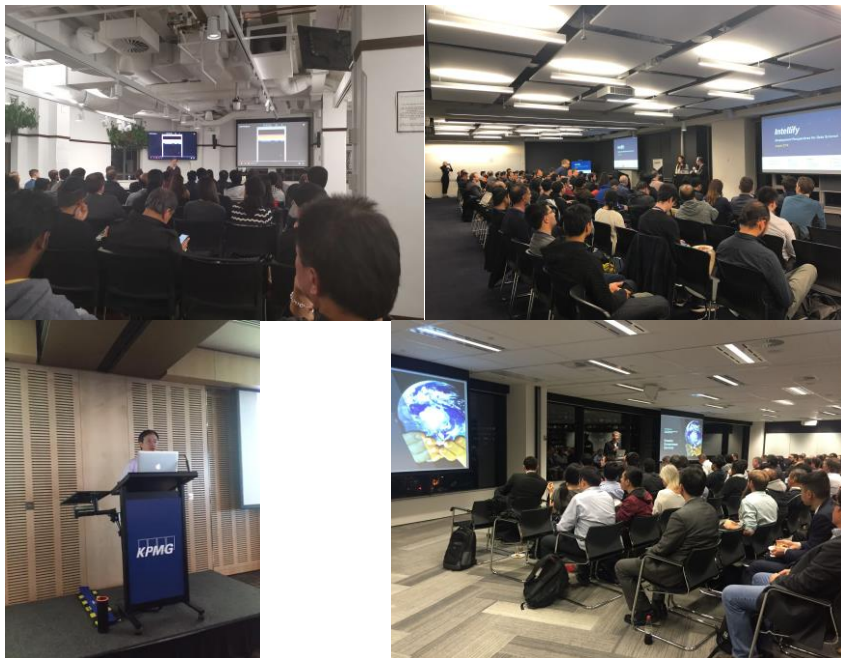
Machine Learning Knowledge Dissemination

Members	Groups	Countries
5,694	4	3

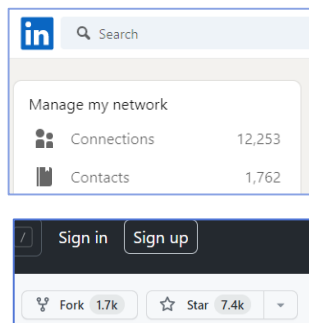Founding member of Bloomberg (HK)'s quantamental exchange.

He is also as a ML knowledge disseminator

Weibo 18.9k

LinkedIn 12k

Github 7.4k
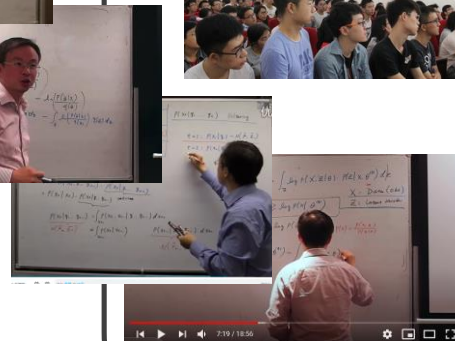
Zhihu 8.4k

Wechat Group

Bilibili 23k

徐亦达教授 发消息
香港浸会大学数学系教授 (机器学习公开课件https://git...
充电   关注 2.3万
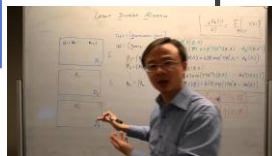
- knowledge dissemination has attracted tens of thousands of global fans and subscribers,
- making it easier to attract talent.

He is also as an excellent engineer

- single-handedly established a 3D real-time computer vision laboratory at Charles Sturt University in Australia and developed over a dozen computer vision demonstration systems. Several years later, he led a team to modernize the laboratory at the University of Technology Sydney using deep learning techniques.

- His team was champion with a great win margin at the microRTS competition during the 2019 IEEE Conference on Games.

He is also a start-up founder

- He founded Tadreamk Limited in February 2023 to develop state-of-the-art AI technology for trademark applications.

- The company received its initial funding through the Technology Start-up Support Scheme for Universities (TSSSU) Program.

- On July 25th, 2023, the company became a member of the Incubation Programme at the Hong Kong Science and Technology Park (HKSTP).

Employment History

Academic appointment

❑ **Hong Kong Baptist University (HKBU): Nov 2021 –**
▪ Full Professor, Department of Mathematics

❑ **The University of Technology, Sydney (UTS): Feb 2010 – Nov 2021**
▪ Associate Professor in Machine Learning, (May 2017 – Nov 2021)
▪ Director of Analytics and Visualization, FEIT (Feb 2017 – Dec 2020)
▪ Lab Director, Machine Learning & Data Analytics, GBDTC (May 2016 – Nov 2021)
▪ Deputy Head of School of Computing and Communications (Dec 2012 – Dec 2015)
▪ Senior Lecturer in Machine Learning (Feb 2010 – May 2017)

❑ **Charles Sturt University (CSU): March 2006 – Jan 2010**
▪ Senior Lecturer, School of Computing and Mathematics (Oct 2009 – Jan 2010)
▪ Lecturer, School of Computing and Mathematics (March 2006 – Oct 2009)

❑ **University of Sydney: 2002 – 2003**
▪ Tutor and Undergraduate Software Project Supervisor, School of Information Technologies

IT industry appointment

❑ **IBM Australia: July 2000 – March 2006**
▪ Software Engineer and Developer (include part-time 2003 – 2005)

❑ **Lucent Technologies (now Alcatel-Lucent): July 1998 – Jan 1999**
▪ PABX Communication system Engineer

Research, Academic Visit and Education

Education

1. PhD in Computer Science, University of Technology, Sydney (UTS) Degree awarded, May 2006

2. Bachelor of Engineering (Computer), University of New South Wales, Degree awarded, May 2001

Academic Visit

1. Sabbatical leave to Dept of Statistics, Oxford University, Jan 2012 – Jun 2012

Publication

- has published more than **130** academic publications
- co-authored with top research scientists including:

    Arnaud Doucet, Chair professor of Dept. Statistics, **Oxford University**, and Senior researchers **Deepmind**

    Zoubin Ghahramani, Professor of Information Engineering, **University of Cambridge**, and chief scientist of **Uber**

Research Publication venues

top international conferences, including:

- International Conference on Learning Representations (ICLR),
- Association for the Advancement of Artificial Intelligence (AAAI)
- International Joint Conferences on Artificial Intelligence (IJCAI)
- European Conference on Artificial Intelligence (ECAI)
- European Conference on Computer Vision (ECCV)
- Artificial Intelligence and Statistics (AISTATS)
- IEEE International Conference on Data Mining (ICDM)

top academic Journals, including:

- IEEE Transactions on Neural Network and Learning System.
- IEEE Transactions on Image processing.
- IEEE Transactions on Knowledge and Data engineering.
- IEEE Transactions on Mobile computing.
- IEEE Transactions on Cybernetics.
- IEEE Internet of Things Journal,
- Machine Learning
- Pattern Recognition
- Transactions on Machine Learning Research

Non-stop Machine Learning research note writing (1)

- Concentration Inequality

- Rademarcher Complexity

- Neural Tangent Kernel

- PAC Bayes

- Johnson–Lindenstrauss lemma

- Model Evaluation

- Decision Tree

- Simple Bayes

- Regression

- Neural Network

- Unsupervised Learning

- Expectation Maximization

- Markov Chain Monte Carlo

- State Space Model (Dynamic model)

- DeeCamp 2019：Story of Softmax

- DeeCamp 2018：When Probabilities meet Neural Networks

- Variance Reduction

- New Research on Softmax function

- Mathematics for Generative Adversarial Networks

- Advanced Variational Autoencoder

- Infinite Depth: NeuralODE and Adjoint Equation

- Bayesian Inference and Deep Learning (Seminar Talk)

- Tutorial on Gradient Descend Research

- Tutorial on Duality

- Conjugate Gradient Descend

- Variational Inference

Non-stop Machine Learning research note writing (2)

- Convolution Neural Networks: from basic to recent Research
- Restricted Boltzmann Machine
- 3D Geometry Fundamentals
- Recent Deep 3D Geometry based Research
- Reinforcement Learning Basics
- Monto Carlo Tree Search
- Policy Gradient
- Word Embeddings
- Deep Natural Language Processing

- introduction to Deep Learning and ChatGPT
- 30 minutes introduction to AI and Machine Learning
- Recommendation system
- Probabilistic Estimation
- Particle Filter (Sequential Monte-Carlo)
- Bayesian Non Parametrics (BNP) and its inference basics
- Bayesian Non Parametrics (BNP) extensions
- Completely Random Measure (early draft - written in 2015)
- Sample correlated integers from HDP and Copula
- Determinantal Point Process Basics (updated)

Industry funded projects (Australia) – on behalf of the University

- **Xu R Y D**, Lipman, G, 2021 – 2023, **Food Agility CRC (partnering with Dairy Australia and Coles)**, "On-Farm Cow Mastitis Treatment using A.I." (Xu left in end of 2021)

- **Xu R Y D**, Lipman, G, 2021, **NSW Department of Primary Industries,** "Pasture Images Analysis, Machine Learning, Automation"

- **Xu R Y D**, Tan, G, and Guo, J, 2020 – 2021, **National Broadband Network (NBN Co.),** " *Project name omitted due to confidentiality agreement* "

- **Xu R Y D**, 2017 – 2021, **CSIRO**, "Deep Bypass: Clear & Dark Real-time Traffic Profiling with Deep Learning"

- **Xu R Y D,** 2020 – 2021, **Office of Naval Research (ONR),** "Detect, Explore and Neutralise NEW threats using advanced Machine Learning."

- **Xu R Y D,** Traish J**,** 2019 – 2020, **Australian Defense Science & Technology Group**, "Counter-Unmanned Aerial System Measures"

- **Xu R Y D,** 2019, **Magellan Financial Group**, "GPU acceleration for simulating financial systems"

- **Xu R Y D,** Justin Lipman**,** 2019 – 2020, **National Broadband Network (NBN Co.)**, "*Project name omitted due to confidentiality agreement*"

- **Xu R Y D**, Traish J**,** 2018 – 2019, **Australian Defense Science & Technology Group**, Distributed Counter-Unmanned Aerial System Measures

- **Xu R Y D,** Traish J**,** 2018 – 2019, **Australian Defense Science & Technology Group**, "Tactical Behaviour Discovery - Real-Time Strategy Games"

- Zhang, J., Guo, Y., **Xu R Y D**, 2019 – 2020, **CSIRO**, "Integrated Miniature Video and Radio Sensors for "Seeing Through" Imaging and Object Tracking

- **Xu R Y D,** Traish J**,** 2018 – 2019, **Jollychic Corporation**, "Jollychic Intelligence Design System"

- Traish J**,** **Xu R Y D**, 2018, **Sydney Trains**, "Sydney Trains bus replacement timetables using advanced optimisation"

- Traish J**,** **Xu R Y D**, 2018, **Sydney Trains**, "Frequency Based Timetable using advanced Optimisation"

- **Xu R Y D,** 2018, **Wolters Kluwer**, "Comparative Verdicts Machine Learning in case law Proof of Concept"

- **Xu R Y D**, 2017, **Ausgrid**, "Predictive Analytics to enhance Ausgrid's Safety Outcomes"

- **Xu R Y D,** 2017, **Sydney Trains**, "Optimising Bus-Bridge during Train Service Interruptions",

- **Xu R Y D** and Ferguson S, 2017, **Marketplace Tech Pty Ltd**, "Peer to peer lending matching algorithm"

- **Xu R Y D**, 2017, **Transport for NSW**, Waiting times operational forcast for transport for NSW Transport

- **Xu R Y D**, 2017, **Transport for NSW**, Aggregated passenger number prediction for transport for NSW Transport

- **Xu R Y D**, 2017, **Transport for NSW**, Roam cvm comparison and visualization for transport for NSW Transport

- **Xu R Y D**, 2017, **NSW Data Analytics Centre**, "Non-compliance Hotspot modeling"

- **Xu R Y D,** 2016 – 2017, **NSW Data Analytics Centre** and **NSW Department of Industry**, "Data Analytics System for Vocational Education & Training Industry Private and Public Stakeholders – Full Project"

- **Xu R Y D**, Oct 2015 – Dec 2015, **NSW DAC** and **NSW Department of Industry**, "Data Analytics System for Vocational Education & Training Industry Private and Public Stakeholders – A pilot study"

Other extracurricular activities

▪ **Competition**

His team was the champion at IEEE Conference on Games MicroRTS competition in 2019.

https://sites.google.com/site/micrortsaicompetition/competition-results/2019-cog-results
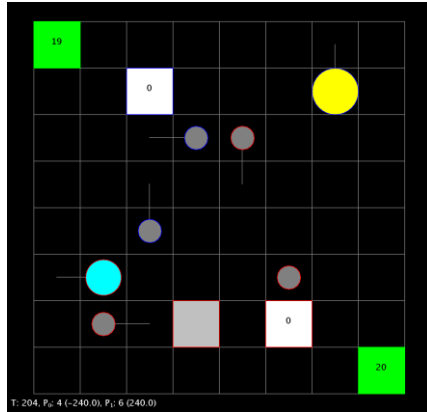
▪ **International Standards**

Served as the Head of the Australian delegation representing Standards Australia at the inaugural meeting of the International Standards Organization (ISO)/ITC1 SC42 – Artificial Intelligence.