

Lun Ai

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Research Interests

- Inductive Logic Programming, Program Induction, Program Synthesis
- Machine Learning Comprehensibility, Explainable AI
- Systems Biology, Computational Scientific Discovery

Education

PhD, Computing Science, **Imperial College London, UK** 09/2019 - 12/04/2024
Thesis: Effects of Machine-Learned Logic Theories on Human Comprehension
in Machine-Human Teaching
Methods: Program Synthesis, Inductive Logic Programming, Explainable AI
MEng, Computer Science (Artificial Intelligence), **Imperial College London, UK** 03/10/2015 - 28/06/2019
A-level, New Talent Academy, Beijing, China 09/2012 - 06/2015
Subjects: Physics(A*)/Chemistry(A*)/Further Mathematics(A*)/Pure Mathematics(A+)

Employment

Research Associate, Imperial College London, UK
Project BBSRC AI-4-EB (**Current**) 23/10/2022 -
Developed a Symbolic AI framework to actively learn gene functions in large metabolic networks
Methods: Active learning, Inductive Logic Programming, Systems Biology
Project EU Horizon TAILOR 19/11/2020 - 22/10/2022
Created a framework for quantifying human comprehension of AI explanations
Methods: Inductive Logic Programming, Explainable AI
Research Support Officer, Imperial College London, UK
Network EPSRC Human-Like Computing 11/05 - 18/11/2020
Co-organised the 2nd International Joint Conference on Learning and Reasoning
with partners from University of Edinburgh and University of Surrey
Software Engineer Intern, Schlumberger Technology Center, Norway 09/04 - 21/09/2018
Developed a backend ML application for analysing geographic data in the Google Cloud platform
Skills: Tensorflow, Pytorch, Google Cloud, Docker, Matlab, Python, C#, Kubernetes
Software Engineer Part-time, LV8Sports (startup), UK 05/11/2017 - 03/04/2018
Created a prototype of a mobile physical training assistant on the Android platform
Skills: OpenCV, Android, Java, C++
Software Engineer Intern, Yiwei Tech (startup), China 09/07 - 11/09/2016
Built a browser web service for mobile video streaming
Skills: HTML, Javascript, Java

Organisation

Organising Committee, the 2nd International Joint Conference on Learning and Reasoning, **IJCLR** 2022

Evidence of Esteem

Program Committee/Reviewer

The 39th International Conference on Logic Programming, ICLP	2023
The 45th Cognitive Science Society Conference, CogSci	2023
Machine Learning Journal, MLJ	2023
The 2nd International Joint Conference on Learning and Reasoning, IJCLR	2022

Awards

The Best Poster, Imperial College Poster Competition	2021
Overall Best Project, Microsoft 3Hack Hackathon Imperial College London	2017
Entry Scholarship, Imperial College London	2015

Publications

Journals

- L. Ai**, J. Langer, S. H. Muggleton and U. Schmid, “Explanatory machine learning for sequential human teaching,” **Machine Learning**, 112:3591–3632, 2023. doi:10.1007/s10994-023-06351-8.
- L. Ai**, S. H. Muggleton, C. Hocquette, M. Gromowski and U. Schmid. “Beneficial and harmful explanatory machine learning,” **Machine Learning**, 110:695-721, 2021. doi:10.1007/s10994-020-05941-0.

Pre-print

- L. Ai**, S.-S. Liang, W.-Z. Dai, L. Hallett, S. H. Muggleton, and G. S. Baldwin. “Human comprehensible active learning of genome-scale metabolic networks,” **arXiv**, Aug. 2023. doi:10.48550/arXiv.2308.12740.

Oral Presentations

Conferences

- L. Ai**, S.-S. Liang, S. H. Muggleton, and G. S. Baldwin, “A Comprehensible Framework to Active Learning Genome-Scale Metabolic Networks,” **AAAI** Fall Symposium on AI for Synthetic Biology, Nov. 2023.
- L. Ai**, J. Langer, S. H. Muggleton and U. Schmid, “Explanatory machine learning for sequential human teaching,” the 3rd International Joint Conference on Learning & Reasoning (**IJCLR**), Nov. 2023.
- L. Ai**, S.-S. Liang, W.-Z. Dai, L. Hallett, S. H. Muggleton, and G. S. Baldwin, “Human comprehensible active learning of genome-scale metabolic networks,” **AAAI** Spring Symposium on Computational Approaches to Scientific Discovery, Mar. 2023.
- L. Ai**, S. H. Muggleton, C. Hocquette, M. Gromowski and U. Schmid, “Beneficial and harmful explanatory machine learning,” the 1st International Joint Conference on Learning & Reasoning (**IJCLR**), Oct. 2021.
- L. Ai**, S. H. Muggleton, C. Hocquette, M. Gromowski and U. Schmid, “Beneficial and harmful explanatory machine learning,” the Conference on Trustworthy AI Through The Integration Of Learning, Optimisation & Reasoning (**TAILOR**), Sep. 2021.

Other

- L. Ai**, “Explanatory machine learning for sequential human teaching,” Imperial College London explAIIn Technical Workshop on Explainable AI, Interactivity, and Natural Language, London, UK, Sep. 2023.
- L. Ai**, S.-S. Liang, W.-Z. Dai, L. Hallett, S. H. Muggleton, and G. S. Baldwin, “Active Learning of Genome-Scale Metabolic Networks via Abduction,” Nanjing University AI Summer School, July 2023.
- L. Ai**, S.-S. Liang, S. H. Muggleton, and G. S. Baldwin, “AI-4-EB Network Engineering,” AI-4-EB AI and Engineering Biology Consortium, London, UK, Apr. 2023.
- L. Ai**, S. H. Muggleton, “Effects of machine-learned logic theories on human comprehension,” Imperial College London Explainable AI Seminar Series, London, UK, July. 2022.
- L. Ai**, S. H. Muggleton, C. Hocquette, M. Gromowski and U. Schmid, “Beneficial and harmful explanatory machine learning,” the Dagstuhl Seminar on Approaches and Applications of Inductive Programming, May. 2021.