

Intelligent Data Analytics Lab

We focus on the research and applications of artificial intelligence techniques for tackling versatile real-world data analytics tasks across various fields.

In the era of big data, data analytics underpins the data-intensive research that responds to industrial challenges. Nowadays, artificial intelligence has developed into the most powerful data analytics technology, leading to remarkable breakthroughs in various fields.

In Swinburne's Intelligent Data Analytics Lab, we leverage on the combined power of artificial intelligence, big data and high performance computing to investigate innovative ways to identify, extract and integrate intelligence from data with the aim of facilitating the data-to-discovery or data-to-decision process. The results will enable organisations to improve their productivity, economic growth and sustainability.

The Lab's major research capabilities include:

- **Machine learning** (particularly deep learning, ensemble learning and transfer learning)
- **Optimisation** (particularly data-driven evolutionary optimisation)
- **Collaborative learning and optimisation** (i.e. the synergy of machine learning and optimisation)
- **Distributed machine learning and distributed optimisation** (based on high performance computing facilities with hybrid CPU-GPU architectures)
- **Big data analytics** (particularly predictive and prescriptive analytics)

- **Computer vision, image processing and video analytics**
- **Text mining and analytics**
- **Time series analytics**

FACILITIES

The Intelligent Data Analytics Lab has access to the Swinburne supercomputer OzSTAR, featuring 230 NVIDIA Tesla P100 GPUs, which is one of the most powerful high performance computing facilities in Australia. OzSTAR provides sufficient computational horsepower to enable computationally intensive data analytics, especially for handling big data.

KEY CONTACTS

Associate Professor Kai Qin, Director of the Intelligent Data Analytics Lab, is recognised internationally for his contributions to the research area of collaborative learning and optimisation which studies the synergy of machine learning and intelligent optimisation. His works have been highly cited with over 7700 citations in Google Scholar. As an IEEE Senior Member, he is currently co-chairing the IEEE Emergent Technologies Task Forces on "Collaborative Learning and Optimisation" and "Multitask Learning and Multitask Optimisation".

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