



Helping research with data science

Luis Torres



A²I²

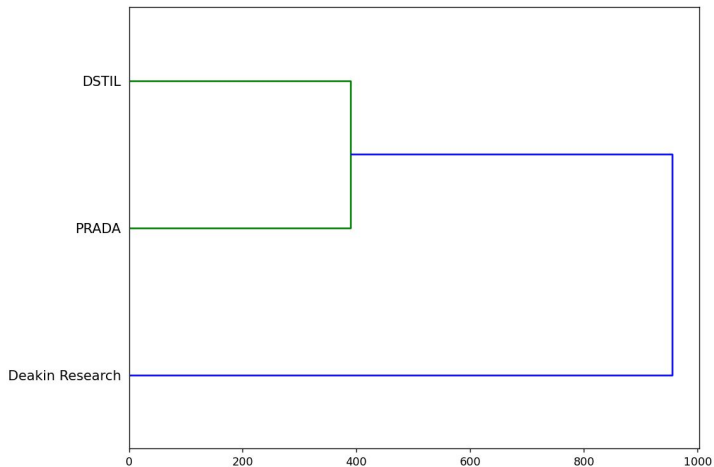
APPLIED ARTIFICIAL
INTELLIGENCE INSTITUTE





About A²I²

<https://a2i2.deakin.edu.au/>



- A²I² = Applied Artificial Intelligence Institute
- Launched January, 2019.
- Previously:
 - Deakin Software Technology and Innovation Lab (DSTIL).
 - Pattern Recognition And Data Analytics (PRADA).



Leadership + Team



Dr. Simon Parker

Head of Operations



Prof. Svetha Venkatesh

Co-Director (Waurm
Ponds)



Prof. Kon Mouzakis

Co-Director (Burwood)

Research areas:

- Defence
- Applied AI/ML
- AI Human Factors
- Bayesian Optimization

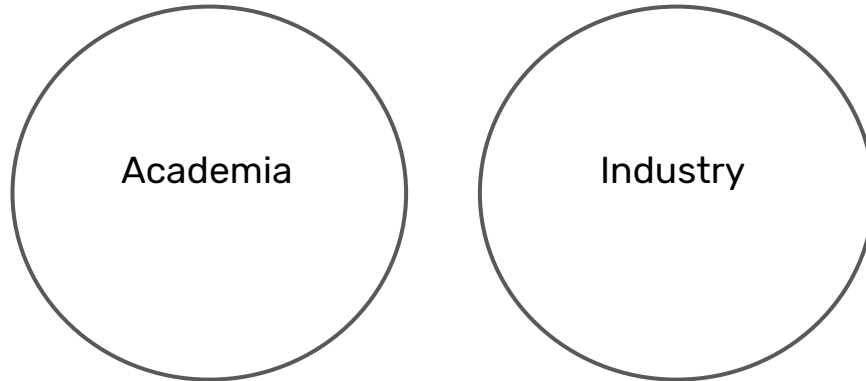
Staff perspective (Burwood):

- Around 50 members
- Software engineers
- Research engineers / Data Scientists
- Research Fellows / Academic Staff
- PhD Students



Link Academia - Industry

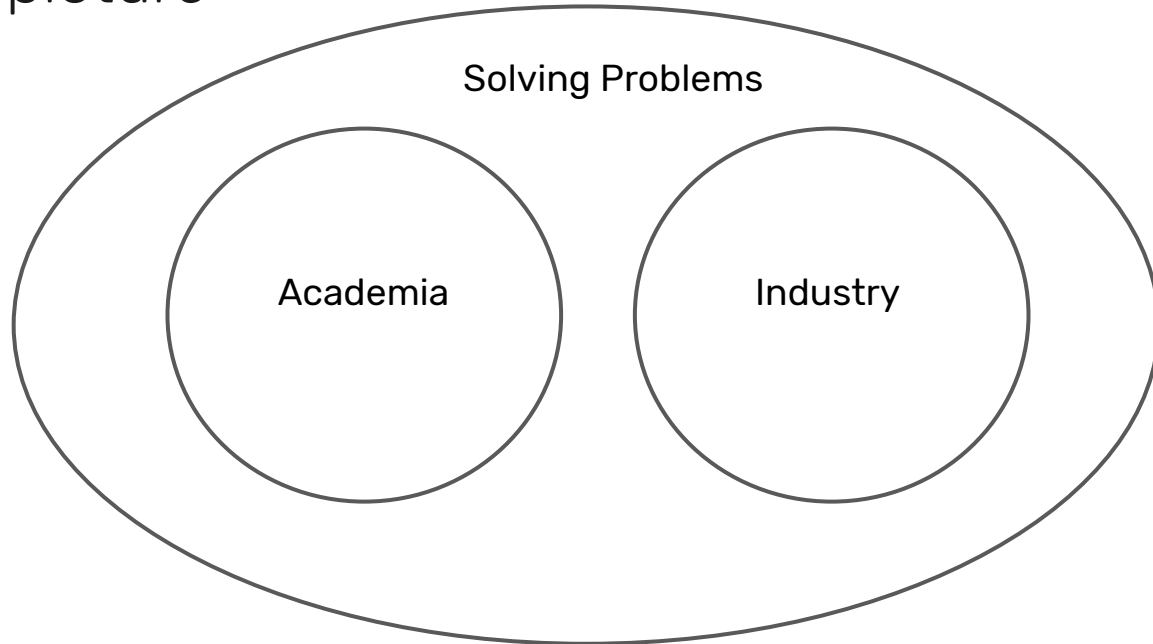
- Idea of institutional and social benefit
- Big picture





Link Academia - Industry

- Idea of institutional and social benefit via data science
- Big picture





Data Science

- Many labels: AI, ML, Analytics, Software, Stats
 - (25%) **Multidisciplinary Investigations**: data analysis collaborations in a collection of subject matter areas.
 - (20%) **Models and Methods for Data**: statistical models; methods of model building; methods of estimation and distribution based on probabilistic inference.
 - (15%) **Computing with Data**: hardware systems; software systems; computational algorithms.
 - (15%) **Pedagogy**: curriculum planning and approaches to teaching for elementary school, secondary school, college, graduate school, continuing education, and corporate training.
 - (5%) **Tool Evaluation**: surveys of tools in use in practice, surveys of perceived needs for new tools, and studies of the processes for developing new tools.

- (20%) **Theory**: foundations of data science; general approaches to models and methods, to computing with data, to teaching, and to tool evaluation; mathematical investigations of models and methods, of computing with data, of teaching, and of evaluation.

Cleveland, W. 2001. → Universities as the spaces to have convergence of these ideas



Data Science -> Third Space

- Multiple knowledge: papers, algorithms, tools, maths, coding → Post-PhD prototype story.

- Conjecture 1:

Third Space = Convolution(Academia, Industry)

- Conjecture 2 (future?):

Third Space = function(Academia, Industry, Government)



Data Science -> Third Space

- Is this evolving into a job style?
Generalist vs Specialist label
- Meaning of job contribution
- Constant knowledge update
- Meaning of job security in this space



This is happening around the world (+ startup effect)



Imperial College London
Data Science Institute

Data Science Institute

Stanford | Stanford Data Science Initiative



HDSI | Harvard Data
Science Initiative



Local / National Response

- These meetings, networking
- Data science teaching and research initiatives at University level
- National Committee for Data in Science (Active?)
- Government (Data opportunities)



Australian Government
**Department of Industry, Science,
Energy and Resources**



A2I2 Projects + Tools + Skills (Few examples)

- Computer vision, image processing, video analysis**
- Analysis of biosignals (heart rate, epilepsy)**
- Analysis of samples of text with a social research scope**
- Applied software engineering and generic ML**
- Merging academic initiatives with industry**

Thank you.

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Deakin Burwood Campus

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