The Law and Ethics of AI
How will the law respond to the rise and challenges of artificial intelligence?

with guest speaker
Professor Dan Hunter

Starting shortly
The Law and Ethics of AI
How will the law respond to the rise and challenges of artificial intelligence?

Introduced by
Professor Melinda Edwards

Starting shortly
QUT acknowledges the Turrbal and Yugara, as the First Nations owners of the lands where QUT now stands. We pay respect to their Elders, lores, customs and creation spirits. We recognise that these lands have always been places of teaching, research and learning.

QUT acknowledges the important role Aboriginal and Torres Strait Islander people play within the QUT community.
The machine learning age
Challenges for law & ethics
Overview
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<td>Introduction</td>
<td>What is AI, really?</td>
<td>Law &amp; Ethics</td>
<td>6 problems</td>
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<td>In which we discuss the way that Dustin Hoffman (of all people) helps us understand AI. And also, in which we are introduced to the Three Horsemen of the AI Apocalypse.</td>
<td>How we can understand 64 years of research and development in approximately 6 slides (not counting the digression)</td>
<td>International consensus, explained</td>
<td>Not even remotely intended to be a comprehensive description of the kinds of issues we face. (I don't even talk about deepfakes and GANS, for example.)</td>
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Introduction
Machine learning
The Three Horsemen
What is AI, really?
Development of AI

Since an early flush of optimism in the 1950s, smaller subsets of artificial intelligence – first machine learning, then deep learning, a subset of machine learning – have created ever larger disruptions.
Machine learning
What is AI these days?

Self-driving cars

- **LIDAR**: This is the heart of the system, which has the task of creating a three-dimensional map of what's around the car. It had a 360° view and a range of up to 200 metres.

- **64 LASERS rotating at 600 rev/min**: The LiDAR is provided by a Silicon Valley company called Velodyne, and costs more than $50,000 (Rs 4.5 lakhs). It has 64 laser emitters, which rotate at 600 revolutions per minute.

- **CAMERA AND RADAR**: In addition to the sensor on the real, the automatic driving mechanism uses radar in the front and back, plus front cameras.

- **BUTTONS**: A touchscreen and very few buttons for setting a journey, starting, or stopping. No swiping allowed to turn on or off the system.

This is the first prototype. In the future, the production car will look different. Moreover, the car will not be produced directly by Google.
Fields: Games

Game over

Average AI score as % of human score
Selected games

- Video Pinball
- Robotank
- Pong
- Space Invaders
- Centipede
- Ms Pacman
- Asteroids

Source: Nature

Moves 37

This figure has only one move: Black 37! This move proved so stunning that, when it appeared on the screen, many players thought the stone had been put down in the wrong place.
In order to capture in a quantitative way the nuance necessary to distinguish man from woman, it is necessary for a model to associate more than a single number to the word pair. A natural and simple candidate for an enlarged set of discriminative numbers is the vector difference between the two word vectors. GloVe is designed in order that such vector differences capture as much as possible the meaning specified by the juxtaposition of two words.

The underlying concept that distinguishes man from woman, i.e. sex or gender, may be equivalently specified by various other word pairs, such as king and queen or brother and sister. To state this observation mathematically, we might expect that the vector differences man - woman, king - queen, and brother - sister might all be roughly equal. This property and other interesting patterns can be observed in the above set of visualizations.
Fields: vision
…a digression
Law and Ethics
Section 1: Principles for responsible stewardship of trustworthy AI

... RECOMMENDS that Members and non-Members adhering to this Recommendation (hereafter the “Adherents”) promote and implement the following principles for responsible stewardship of trustworthy AI, which are relevant to all stakeholders.
1.2. Human-centred values and fairness

a) AI actors should respect the rule of law, human rights and democratic values, throughout the AI system lifecycle. These include freedom, dignity and autonomy, privacy and data protection, non-discrimination and equality, diversity, fairness, social justice, and internationally recognised labour rights.

b) To this end, AI actors should implement mechanisms and safeguards, such as capacity for human determination, that are appropriate to the context and consistent with the state of art.
1.4. Robustness, security and safety

a) AI systems should be robust, secure and safe throughout their entire lifecycle so that, in conditions of normal use, foreseeable use or misuse, or other adverse conditions, they function appropriately and do not pose unreasonable safety risk.

b) To this end, AI actors should ensure traceability, including in relation to datasets, processes and decisions made during the AI system lifecycle, to enable analysis of the AI system’s outcomes and responses to inquiry, appropriate to the context and consistent with the state of art.

c) AI actors should, based on their roles, the context, and their ability to act, apply a systematic risk management approach to each phase of the AI system lifecycle on a continuous basis to address risks related to AI systems, including privacy, digital security, safety and bias.
1.5. Accountability

AI actors should be accountable for the proper functioning of AI systems and for the respect of the above principles, based on their roles, the context, and consistent with the state of art.
6 problems
The XAI problem
Facial recognition
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**Criminogenic and Needs Profile**

- Unlikely
- Probable
- Highly Probable

**PredPol's crime targets (2011)**

**Estimated drug crime (2011)**

**Drug arrests (2010)**
The trolley problem

You find yourself at a lever. A runaway trolley approaches five people who are tied to a set of tracks. Pulling the lever will divert the trolley to a different set of tracks, where only one person is tied down.

Do you pull the lever?
Killer robots
Real killer robots
Conclusion
What should you do?

1. Don’t panic about the Singularity.

2. Expect traditional law & ethics to work fine about 53% of the time.

3. For the remaining 47% of the time, ask Australian federal and state governments to do something (or anything).
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14

May 2020

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