Artificial Intelligence, from hype to reality

A discussion on AI, fairness and ethics
The Panel

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Our topics

1. What is AI and how does it work?
2. AI in practice: drawbacks
3. Ethical principles for the use of AI
4. Operationalizing the principles
1. What is AI and how does it work?

1: A branch of computer science dealing with the simulation of intelligent behavior in computers.
2: The capability of a machine to imitate intelligent human behavior

[...] the artificial intelligence problem is taken to be that of making a machine behave in ways that would be called intelligent if a human were so behaving

1. **What is AI and how does it work?**

Machine learning uses computers to run predictive models that learn from existing data to forecast future behaviors, outcomes, and trends.

Deep learning is a sub-field of machine learning, where models inspired by how our brain works are expressed mathematically, and the parameters defining the mathematical models, which can be in the order of few thousands to 100+ million, are learned automatically from the data.
1. What is AI and how does it work?

**SUPERVISED**
All data is labeled and the algorithms learn to predict the output from the input data.

**UNSUPERVISED**
All data is unlabeled and the algorithms learn to inherent structure from the input data.

**REINFORCEMENT LEARNING**
Goal-oriented algorithms, which learn how to attain a complex objective (goal) or maximize along a particular dimension over many steps.

**SEMI-SUPERVISED**
Some data is labeled but most of it is unlabeled and a mixture of supervised and unsupervised techniques can be used.
Courts have different processes

- Routine: AI to support case processing
- Non-adversary: AI to support users with solution exploring, filing
- Settlement: negotiation support
- Judgment: research support
How does the CRT use AI?

Solution Explorer

- Free public legal information and tools, available 24/7
- Guided pathways
- Interactive question and answers
- Resolution or preparation for CRT process
- Quarterly updates on content
GET STARTED

Start with our Solution Explorer. It diagnoses your dispute. Free legal information and tools like customized letter templates can help you resolve your dispute on your own.

APPLY

If you can’t resolve your dispute on your own, you can apply to the CRT for dispute resolution. Apply directly from the Solution Explorer. It will send you to the right application form for your type of dispute.

NEGOTIATE

Once your application is accepted, try our secure and confidential negotiation platform. You can talk through your dispute and try to reach an agreement by yourselves.

REACH AN AGREEMENT

If you can’t resolve your dispute by negotiation, a facilitator will try to help you reach an agreement. Agreements can be turned into orders, and be enforced like a court order.

GET A DECISION

If you can’t reach an agreement by negotiation or facilitation, an independent CRT member will make a decision about your dispute. This decision can also be enforced like a court order.
Civil Disputes
Motor Vehicle Accidents and Injuries

Your Exploration Information
Access code: a216QXM7D

Information You Provided
1. I'm not an insurance adjuster
2. I've reported the accident to an insurer
3. The accident happened on or after April 1, 2019
4. I was injured in the accident

Resources
INFO: The CRT and Motor Vehicle Accidents

Additional External Resources
Limitation Periods
CRT Decisions

Select issues to explore
Select as many issues as you'd like. We'll take you through them one at a time.

Which issues would you like to explore?
- [ ] Accident benefits
- [ ] Compensation ("damages") for things not covered by benefits
- [ ] Whether my injury is considered minor

Not finding an option you were expecting? Help us improve our site and tell us what’s missing.
**Suggested Resource**

INFO: The CRT and Motor Vehicle Accidents

Learn what types of motor vehicle accident disputes can be resolved by the CRT.

What you should know

The Civil Resolution Tribunal (CRT) is an independent tribunal. It isn’t subject to government control in how it resolves disputes. The CRT is not part of the Insurance Corporation of British Columbia (ICBC) or...
Civil Disputes
Motor Vehicle Accidents and Injuries

What would you like to do next?

- Contact the insurer with a counter-offer
- Get professional advice
- Ask the Civil Resolution Tribunal (CRT) to decide fault for the accident and award damages

Not finding an option you were expecting? Help us improve our site and tell us what's missing.
Dear [Insurer Name],

RE: Counter-offer for damages under claim #[Enter your insurance claim number]

I'm writing to disagree with your settlement offer of $[Enter the settlement offer amount] dated [Enter the date of the offer] for motor vehicle accident damages.

I think my damages are worth at least $[Enter the total amount]. I think this compensation should include:

- $[Enter the pain and suffering amount] for pain and suffering
- $[Enter the past income loss amount] in past income loss
Summary Report

This summary report shows all the steps you took in your exploration, the resources we showed you, and what you can do. If dispute resolution is available, you can start an application at the bottom of this report. Remember that a limitation period may apply. It could run out if you wait too long to take action.

To return to this report:
Your access code is: HVWWGNtfa
Access expires in 32 days on March 25, 2019

Disputes
Your exploration found 1 dispute(s). If you have more than one dispute, use the tabs to switch between them.

Dispute 1

Motor vehicle accident disputes - damages

You told us you had a motor vehicle accident on or after April 1, 2019. You were injured in the accident. You also told us the insurer made a settlement offer for damages, but you aren't satisfied with it.
expert system

noun: expert system; plural noun: expert systems

a piece of software programmed using artificial intelligence techniques. Such systems use databases of expert knowledge to offer advice or make decisions in such areas as medical diagnosis and trading on the stock exchange.
Expert systems

- Imitate or emulate interactions with human expert
- Not replacing human expert
- “1st wave” AI
  - Logical rules & reasoning
  - Handcrafted knowledge
What does a legal expert system do?

- Models legal knowledge, reasoning, and guidance
- Applies law to facts
- NOT an information website about another service or process
The Solution Explorer
Knowledge Base

Decision trees

Logic-based rules

Conditional “if…then…” structure
Knowledge Base Creation – Work Phases

**Content Creation**
- Subject Matter Expert
- Knowledge Engineer
- Content Specialist

**Review & Approval**
- Designated Approver
- Content Specialist

**Extract, Transform & Load**
- Expert System Analyst

**User Test**
- “Friends and Family”
- Public
Where else could the CRT use AI?

- Predict MVA personal injury awards using machine learning as a free legal info tool
  - Requires transparency
  - Front end public tool
  - NOT part of adjudication
- Chatbot technology in Solution Explorer
- Voice recognition in Solution Explorer and form completion
- Translation of tribunal web and Solution Explorer content through machine learning
2. Drawbacks for the administration of justice

✓ Data quality (and quantity)
✓ Discrimination and bias
✓ Lack of transparency
✓ Etc.
Data quality (and quantity)

Quality → Who controls the information?
Also unsourced was an inaccurate answer that said former President Barack Obama and Rep. Peter King (R., NY) are Muslim members of Congress.

"THE WALL STREET JOURNAL"

Quantity → How much is enough?
For a machine to recognize a cat with a 95% success rate, we need access to somewhere in the vicinity of 100,000 pictures of cats.

"Luc Julia"
Discrimination and bias

Result:

❌ Unjust treatment of different categories of people
❌ Distinction we consider unfair

Cause:

❓ Biased judges?
❓ Biased laws?
❓ Biased programmers?
❓ Lack of data?
❓ Bad algorithms?

The Toronto Declaration: Protecting the right to equality and non-discrimination in machine learning systems

Preamble
1. As machine learning systems advance in capability and increase in use, we must prepare for the impact of this technology on human rights. We acknowledge the potential for machine learning and related technologies to be used to promote human rights, but we are increasingly concerned about the capability of such systems to facilitate intentional or inadvertent discrimination against certain individuals or groups of people. We must urgently address how these technologies will affect people and their rights, in a world of machine learning systems, who will bear accountability for harming human rights?

2. As discourse around ethics and artificial intelligence continues, this Declaration aims to draw attention to the relevant and well-established framework of international human rights law and standards. These universal, binding and authoritative laws and standards provide language means to protect individuals from discrimination, to promote inclusion, diversity and equity, and to safeguard equality, human rights and “universal, inclusive and interdependent”.

3. This Declaration aims to build on existing discussions, principles and papers exploring the harms arising from these technologies. This significant work done by the Declaration and the pivotal issues and ideas are many experts has helped raise awareness about discrimination and bias in machine learning systems.

Describe the system with a short title: 'The problem datasets are not discriminative'.

Erna Hoven; Government Affairs, Information Commissioner's Office

The problem datasets are not discriminative. We need to address the data and the way they are collected, and how they are used. We need to ensure that the data is representative of the population. We need to ensure that the data is unbiased.

- [Link to article] (https://www.thenextweb.com/enterprise/2019/01/08/this-machine-learning-application-can-predict-future-crime-and-it-s-biased-against-blacks/)

Machine Bias

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Discrimination and bias

Correctional Offender Management Profiling for Alternative Sanctions (COMPAS)
Lack of transparency

“Proprietary legal cognition framework…”

https://www.youtube.com/watch?v=BO-Ltxk7Hj4
3. Tackling the drawbacks: ethical guidelines

The data subject shall have the right not to be subject to a decision based solely on automated processing, including profiling, which produces legal effects concerning him or her or similarly significantly affects him or her.
European ethical Charter for the use of AI in judicial systems and their environment

✓ Council of Europe Commission for the Efficiency of Justice (CEPEJ)
✓ Quality group
✓ Ethical charter
✓ Adopted December 2018
✓ 5 principles
Principle 1: Respect for fundamental rights

Ensure that **design** and **Implementation** of AI tools and services are Compatible with fundamental rights…

- Privacy
- Equal treatment
- Fair trial

- Fair trial
- Transparent
- Equality of arms
- Reasoned decision
Prevent discrimination between individuals or groups of individuals

e.g.: Risk assessments in custody, sentencing and parole (COMPAS and Northpointe)
Principle 3: Quality and Security

…processing of judicial decisions and data, use **certified sources** and **intangible data** with models conceived in a **multidisciplinary** manner, in a **secure** technological environment…
Principle 4: Transparency, impartiality and Fairness

- Make data processing methods accessible and understandable
- Authorize external audits
Principle 5: AI under user control

- Preclude a **prescriptive approach**
  → The computer does not decide on its own

- Ensure that users are **informed actors**
  → Users know what the AI does

- Users are **in control** of their choices
  → Users can decide what to do with the AI’s result
4. Operationalizing the ethical guidelines

✓ Create multidisciplinary teams
✓ Conduct algorithmic impact assessments
✓ Allow external audits
✓ Promote transparency and explainability
✓ What else?
Questions / Comments?

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