Institute of Big Data Governance (IBDG):
Inauguration-cum-Digital Economy and Big Data Governance Symposium
5 December 2018 | InnoCentre, Kowloon Tong

Big Data & AI Governance:
The Laws and Ethics

Stephen Kai-yi Wong, Barrister
Privacy Commissioner for Personal Data
Tim Cook: Our Own Information Is Being ‘Weaponized’ Against Us

Source: Fortune, 24 Oct 2018
Facebook 'likes' can reveal your secrets, study finds

By Heather Kelly, CNN
Updated 1900 GMT (0300 HKT) March 11, 2013

Source: CNN, 11 Mar 2013
A computer program used for bail and sentencing decisions was labeled biased against blacks. It’s actually not that clear.


Amazon ditched AI recruiting tool that favored men for technical jobs

Specialists had been building computer programs since 2014 to review résumés in an effort to automate the search process.

Source: The Guardian, 11 Oct 2018

Study finds gender and skin-type bias in commercial artificial-intelligence systems

Examination of facial-analysis software shows error rate of 0.8 percent for light-skinned men, 34.7 percent for dark-skinned women.

Source: MIT News, 11 Feb 2018
Technology

Uber Starts Charging What It Thinks You’re Willing to Pay

The ride-hailing giant is using data science to engineer a more sustainable business model, but it’s cutting drivers out from some gains.

By Eric Newcomer

2017年5月19日 下午10:45 [GMT+8]
Updated on 2017年5月20日 上午3:19 [GMT+8]

Source: Bloomberg, 19 May 2017
Overuse of e-payments in Sweden caused inconvenience to tourists and elderly

Could not process payments during power outage

Source: HK01, 29 May 2018
A facial recognition system for combating jay walking in Ningbo, Zhejiang Province, misidentified a bus advert as human

Ningbo Police:
- Will upgrade the system to reduce similar errors in future

Source: Oriental Daily, 23 Nov 2018
US lawmakers say AI deepfakes ‘have the potential to disrupt every facet of our society’

They’re asking the intelligence community to assess the threat from AI video manipulation

By James Vincent | @vincent | Sep 14, 2018, 1:17pm EDT

How Big Data Mines Personal Info to Craft Fake News and Manipulate Voters

BY NINA BURLEIGH ON 6/8/17 AT 1:01 PM

Source: The Verge, 14 Sep 2018

Source: Newsweek, 8 Jun 2017
Hospital Authority explores using AI to identify X-ray images that warrant urgent attention

Doctor:
- Use of AI in analysing images is still at infant stage
- Inappropriate to “apotheosise” AI at this stage

Source: Ming Pao, 23 Nov 2018
Privacy and Ethical Implications of Big Data and AI
Massive and ubiquitous data collection from multiple sources

Tracking online and offline

Individuals unaware of data collection and use

No meaningful notice & consent
(2) Re-identification

- Aggregate de-identified data from various sources
- Analyse and link up seemingly unrelated data
- Re-identify individuals & destroy anonymity
(3) Profiling & Unexpected Data Use

- Analyse innocuous data to predict **intimate and sensitive** data
- Correlations (not causality)
- Individuals may be **surprised** by predictions

**What** | **Who** | **Where** | **When** | **How** | **Why** | ?
(4) Bias and Discrimination

- Profiling based on inaccurate or incomplete information
- Mixing up correction and causality of events
- Infiltration of human bias
- Unfair discrimination
(5) Unpredictability & Low Transparency of AI

Machine learning, deep learning and neural network

Self-evolving algorithms

Out of human comprehension

Black box
Withhold data by big tech companies

Consumer
- Loss of control

Market
- Less competition and choices
- Hold back innovation
**Data Protection Principles**

1. **Collection Purpose & Means**
   - Personal data must be collected in a lawful and fair way, for a purpose directly related to a function/activity of the data user.
   - All practical steps shall be taken to notify the data subjects of the purpose of data collection, and the classes of persons to whom the data may be transferred.
   - Data collected should be necessary but not excessive.

2. **Accuracy & Retention**
   - Practicable steps shall be taken to ensure personal data is accurate and not kept longer than is necessary to fulfill the purpose for which it is used.

3. **Use**
   - Personal data is used for the purpose for which the data is collected or for a directly related purpose, unless voluntary and explicit consent is obtained from the data subject.

4. **Security**
   - A data user needs to take practical steps to safeguard personal data from unauthorised or accidental access, processing, use, loss or misuse.

5. **Openness**
   - A data user must take practicable steps to make personal data policies and practices known to the public regarding the types of personal data it holds and how the data is used.

6. **Data Access & Correction**
   - A data subject must be given access to his personal data and to make corrections where the data is inaccurate.
International responses to big data and AI

- The House of Lords published “AI in the UK report” in April 2018, recommending an ethical guidance in the form of an AI code of conduct.

- The Centre for Data Ethics and Innovation was established in November 2018 to advise the Gov’t on how to maximise the benefits of data-enabled technologies, including AI.
The data protection authority, CNIL, published the report "HOW CAN HUMANS KEEP THE UPPER HAND? The ethical matters raised by algorithms and artificial intelligence" in December 2017.

- Recommended solutions ranging from setting up national platform to audit AI algorithms to strengthening ethics.
International responses to big data and AI

Executive Office of the President published the “Preparing for the Future of Artificial Intelligence” report in October 2016

- Recommended governance to ensure efficacy and fairness of the systems
International responses to big data and AI

- GDPR grants individuals the right to object to fully automated decision-making (Article 22)

- “Statement on Artificial Intelligence, Robotics and ‘Autonomous’ Systems” issued by the European Commission in March 2018 and proposed a set of ethical principles
  - e.g., Human dignity, Responsibility, Equity and Accountability
International responses to big data and AI

Source: Cyber Space Administration of China, 12 Sep 2016

Schema on The National Strategy of Informatisation 2016:

- Reinforce internet governance
- Protect legal rights of citizens
International responses to big data and AI

Minister of Science & Technology:

- AI development meets ethical challenges
- Guidelines for AI will be issued

Source: Ming Pao, 11 Mar 2018
Responses from the business community

Gartner picks digital ethics and privacy as a strategic trend for 2019

Source: TechCrunch, 15 Oct 2018

DeepMind has launched a new 'ethics and society' research team

Google DeepMind has launched a new research unit to help understand the real world impacts of artificial intelligence (AI).

The London-based research lab announced its "Ethics

Source: Business Insider, 4 Oct 2017

IBM launches tool aimed at detecting AI bias

Source: BBC News, 19 Sep 2018

Source: Business Insider, 4 Oct 2017
Six guiding principles for AI development:

1. Fairness principle
2. Continued attention and vigilance
3. Systems transparency and intelligibility
4. Ethics by design
5. Empowerment of every individual
6. Reducing biases or discriminations
Accountability & Ethics as the Answer

“Arguably the biggest change [brought by the GDPR] is around accountability.”
Elizabeth Denham, Information Commissioner of the UK

“[The GDPR] aims to restore a sense of trust and control over what happens to our online lives.”
Giovanni Buttarelli, European Data Protection Supervisor
“Rapid technological developments and globalisation have brought new challenges for the protection of personal data. ... Technology... should further facilitate the free flow of personal data ... while ensuring a high level of the protection of personal data.”
GDPR - Return of control back to individuals

Enhanced consent:
- Informed
- Unambiguous
- Freely given
- Specific

Enhanced rights:
- Right to be forgotten
- Right to data portability
- Right to object to processing, etc.
Accountability:
Privacy Management Programme (PMP)

Benefits:
- Effective management of personal data
- Minimisation of privacy risks
- Effective handling of data breach incidents
- Demonstrate compliance and accountability

Download >>
1. Organisational Commitment

1.1 Buy-in from the Top

1.2 Appointment of Data Protection Officer/ Establishment of Data Protection Office

1.3 Establishment of Reporting Mechanisms
PMP – Main Components

2. Programme Controls

2.1 Personal Data Inventory
2.2 Internal Policies on Personal Data Handling
2.3 Risk Assessment Tools
2.4 Training, Education and Promotion
2.5 Handling of Data Breach Incident
2.6 Data Processor Management
2.7 Communication
PMP – Main Components

3. Ongoing Assessment and Revision

3.1 Development of an Oversight and Review Plan

3.2 Assessment and Revision of Programme Controls
Data Ethics & Trust

Consumers

Data

Ethical Obligations

Businesses
What does “ethical data processing” mean?

“Fair data processing” – what would the standards be to describe what being “fair” means?

What is the direct or indirect linkage between fair/ethical data processing and legal requirements, and what aspects of ethical data stewardship go beyond the law?

What are the motivators for business to adopt the principles and standards and utilise ethical data impact assessments?

Promoting Ethics: “Legitimacy of Data Processing Project”

Objectives
Deliverables by the Consultancy

- Find out the meaning and core values of data ethics
- Provide tools to bring the core values of data ethics into practice
- Encourage businesses to embrace data ethics in daily operation
“Ethical Accountability Framework for Hong Kong China”
REPORT OF LEGITIMACY OF DATA PROCESSING PROJECT

Ethical Accountability Framework for Hong Kong China
A Report prepared for the Office of the Privacy Commissioner for Personal Data
Analysis and Model Assessment Framework

(Published on 24 October 2018)
3 Data Stewardship Values

1. Respectful
   - Be transparent
   - Control by individuals

2. Beneficial
   - Identify and assess risks and benefits to stakeholders
   - Mitigate risks

3. Fair
   - Avoid bias and discrimination

Core Values of Data Ethics
Practical Tools

2 Assessment Models

1. Model Ethical Data Impact Assessment
   - Assess the impact of data processing activities on all stakeholders

2. Process Oversight Model
   - Evaluating organisations’ data stewardship
Ethical Data Impact Assessment – Questions to Consider

What are the **business objective** and **purpose** of the data processing activity?

What are the **nature**, **source**, **accuracy** and **governance** of the data?

What is the **impact (risks and benefits)** on the individuals, the society and the organisation itself?

Is there a proper **balance** between expected benefits and the mitigated risks?
Process Oversight – Questions to Consider

- Are the **accountability and responsibility** of data stewardship clearly defined?
- Are the core values translated into **principles, policies and processes**?
- Does the organisation adopt “**ethics by design**”?
- Are **Ethical Data Impact Assessments** properly conducted?
- Are **internal reviews** conducted periodically?
- Are there any **feedback and appeal mechanisms** for the individuals impacted?
- Is there any mechanism to ensure the **transparency** of the data processing activities?
“Trust is the new gold.”

Andrea Jelinek,
Chair of European Data Protection Board
PCPD’s Strategic Focus

- Compliance
- Accountability
- Ethics/Trust/Respect
- Engaging
- Incentivising
- Culture