Ethical Challenges and the Way Forward

Prof. Tom Sorell
University of Warwick
Ethics issues

• Benefits vs hunger for "sensitive" data
• Research ethics
• Intelligibility of algorithms
  • Producing more intelligibility
  • Black box
• Liability and trust issues
• Value to data subjects or the public
Benefits vs data hunger

- Faster, more accurate recognition of abnormal tissue
- Data scientists prefer large training sets
- Training sets for digital pathology are in protected category (health)
- Data protection policy can give the impression of impeding data science
Research ethics

• Anonymised vs pseudonymised data
• AI-training of algorithms as secondary use of data (often with repurposing)
• Is a datalake a data archive?
• Does processing data from a data-lake introduce special responsibilities?
Intelligibility of AI, algorithms

• Intelligibility of AI to patients
  Patient informed consent valid given most do not understand AI?

• Intelligibility of AI to doctors, pathologists
  • Ethical to recommend digital diagnosis, or to delegate tissue classification to AI?

• Intelligibility of ML algorithms to data scientists (black box problem)
  •
Ethics of algorithms

- Ethics of algorithms (outside pathology)
  - Bias – facial recognition
  - Reinforcement of the status quo—employment
  - Improper replacement of human judgement
    - Humans in the loop
    - GDPR Art 22 right
Lack of intelligibility: antidotes

- “Reverse engineering” (possibly with bots) Diakopolis, 2013; Seaver, 2013
- Data Science education
- Popular Data science? communication
- New kinds of informed consent communication
Trust and liability

• Can pathologists who don’t understand AI conscientiously delegate classification of tissue samples into normal and abnormal to an algorithm?

• If images of tissue are falsely classified as normal and an undiagnosed cancer is allowed to develop, who, if anyone, is liable?
  • Connection to the data processing question
  • GDPR right to be humanly evaluated (Art. 22)
NHS code of conduct for data-driven research

- Pathlake as a public-private collaboration and NHS data
- NHS Code of conduct for data driven research
- Value to data donors through value to NHS?
Principle 10: Define the commercial strategy

The foundation of any commercial structure should be to ensure that the terms of the engagement fairly allocate the benefits between the parties based on their respective contributions, roles, responsibilities, risks and costs. When the basis of the commercial arrangement is NHS data, it must adhere to the revised guiding principles described in Creating the right framework to realise the benefits of health data. We want to hear views from patients, the public and partners on these principles as we develop the final, full policy framework to be published later this year.

Before entering into any commercial arrangement, the problems that need solving, and who for, including any long-term vision, should be fully understood by all parties. The relationship between the parties will be set out in a binding legal contract that will impact on all parties both during and long after the lifetime of the contract. This will require legal advice.

Before engaging with the legal teams, the following should be considered:

- proportionality
- scope
- exclusivity
- value
- ownership of intellectual property
- liability
- audit
- bias
- roles
Excerpts from “The Right Framework”

**Principle 2**

NHS data is an important resource and NHS organisations entering into arrangements involving their data, individually or as a consortium, should ensure they agree fair terms for their organisation and for the NHS as a whole. In particular, the boards of NHS organisations should consider themselves ultimately responsible for ensuring that any arrangements entered into by their organisation are fair, including recognising and safeguarding the value of the data that is shared and the resources which are generated as a result of the arrangement.

**Principle 3**

Any arrangements agreed by NHS organisations should not undermine, inhibit or impact the ability of the NHS, at national level, to maximise the value or use of NHS data. NHS organisations should not enter into exclusive arrangements for raw data held by the NHS, nor include conditions limiting any benefits from being applied at a national level, nor undermine the wider NHS digital architecture, including the free flow of data within health and care, open standards and interoperability.
Way ahead

• More sessions like this
• Small-scale interactions between stakeholders with conflicting interests
Contact

• t.sorell@warwick.ac.uk