AI: predicting and modelling

Seminar 2

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Machine Learning & Artificial intelligence

- **Artificial intelligence**: the process through which computers seem to act 'intelligently,' learning, solving problems and making decisions in ways that (for some) broadly mimic human learning or problem-solving or decision-making
- **Machine learning**: referring to AI methods whereby computers predict future data from existing data
  - *Structured* learning: predicting the probability of reoffending based on demographic and other data
  - *Reinforcement* learning: using 'rewards' to incentivise desirable decisions, for instance in medical imaging

ML is a generally non-theoretical practice

Tested on (often huge) datasets, not (necessarily) from hypothesis

A three-stage Workflow

1. Input (data)
2. Process (algorithm)
3. Output (impact)

Structured learning: models and prediction

(let's turn to Noteable)

Methods (and jargon)

1. Linear regression
2. Random walks/random forest
3. Monte Carlo simulations
4. Neural networks (a bit different)
5. Deep learning

ML and AI: for tomorrow

- Doing things that human agents cannot do
  - Managing, parsing and 'making sense of' vast information flows
  - Eliminating human bias?
- But not to be hyped
  - Which patterns are identified?
  - What bias remains?
    - In the data?
    - In the design?
  - What new risks?

Thank you