Algorithmic risk assessment policing models – lessons from Durham Constabulary’s HART model

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“UK police forces have access to a vast amount of digital data, but currently lack the technological capability to use it effectively.”

Data & Algorithmic analysis

Three main purposes for algorithmic data or intelligence analysis within the policing context:

i) predictive policing on a macro level incorporating strategic planning, prioritisation and forecasting;

ii) operational intelligence linking and evaluation which may include, for instance, crime reduction activities; and

iii) decision-making or risk-assessments relating to individuals.

(Oswald, Grace, 2016)
Want To Leave A Life Of Crime Behind?

We Can Checkpoint You In The Right Direction
Lammy review argued for ‘more interventions that do not rest upon plea decisions’ so deferred prosecutions, restorative justice schemes. Review highlighted ‘Turning Point’ in West Midlands and ‘Checkpoint’ in Durham where certain offenders had prosecution deferred provided agreed to go through programme of structured interventions e.g. drug or alcohol treatment.
Checkpoint eligibility: who (or what) decides?

- A risk forecasting algorithmic model

To support decision-making by

- The custody officers
Durham Harm Assessment Risk Tool

- **Forecasts** whether someone is high, medium or low risk and so whether could be eligible for Checkpoint
- **What does high risk mean?**
  - A new serious offence within 2 years (murder, attempted murder, GBH, robbery, sexual offence, firearm offence)
- **What is medium risk? [potentially eligible]**
  - Any new offence, provided not serious
- **Low risk = no new offending of any kind**
HART uses a ‘Random forest’ machine-learning approach
False positives and false negatives

- False positive
  - Forecasted high/medium risk, actually low risk

- False negative
  - Forecasted low risk, actually high risk
Professor Richard Berk

- On ‘trade-offs’:

  https://www.youtube.com/watch?v=gdEPPRhNu34 (5-7 mins)
HART model raises all these issues & others

• Inconclusive output: probable but not conclusive
• Risk of ‘judgmental atrophy’ (Hildebrandt, 2017): fettering discretion
  • After all, ML tools are ‘just thoughtless fuzzy pattern recognizers’ (Somers 2017) or ‘mindless agents’ (Hildebrandt 2016)
• Opacity/Right to a fair hearing: can the algorithm rationalise and explain its actions so that it can be interrogated?
• Risk of bias - proxies for protected attributes/historical data/group classification/correlation ≠ causation
• Necessary, proportionate, accordance with law – both means and ends
But it also has potential benefits…

- **Consistency** in decision-making
- Combining the **experience** of many custody officers: are we ‘wiser in a crowd’? (Matt Ridley, Huxley Summit 2016)
- **Testing** and **adjustment** and (if done right) better **transparency** of the decision-making process
- [In context of Checkpoint] effective forecasting can lead to more ‘**effective triage**’ and therefore better results in terms of reoffending and cost
- **Risk assessment** (the likelihood of something bad happening and the impact if it actually does) in the policing context is **hard**! Forecasting/prediction/risk assessment fundamental part of the policing task.
Or

“The problem comes when the database and the engine go from coach to oracle”

• ‘Experimental’ proportionality model

and

• A practical, meaningful decision-making framework for practitioners: ‘Algo-care’