

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

‘Artificial Intelligence, Big Data and  
the Rule of Law’

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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.”

Alexander Babuta “Big Data and Policing: An Assessment of Law Enforcement Requirements, Expectations and Priorities” Royal United Services Institute Occasional Paper, September 2017 (7)

# 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



# The Lammy Review

An independent review into the treatment of, and outcomes for, Black, Asian and Minority Ethnic individuals in the Criminal Justice System



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.

**Computer says NO!**

Or

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

**Garry Kasparov** ‘Deep Thinking: Where Machine  
Intelligence Ends And Human Creativity Begins’ (2017)



- ‘Experimental’ proportionality model
- and
- A practical, meaningful decision-making framework for practitioners: **‘Algo-care’**

Oswald, Grace, Urwin & Barnes, *Algorithmic Risk Assessment Policing Models: Lessons from the Durham Hart Model and ‘Experimental’ Proportionality* (August 31, 2017). Available at SSRN: [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3029345](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3029345)