Regulating by Robot and Adjudicating by Algorithm: Machine Learning in the Administrative State

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Overview

1. Machine Learning in the Administrative State
   • Adjudicating by algorithm
   • Regulating by robot

2. The Legality of Machine Learning
   • Nondelegation
   • Due Process
   • Anti-discrimination
   • Transparency

3. The Merits of Machine Learning
## AI in the Administrative State

<table>
<thead>
<tr>
<th>Individual Judgments (Adjudications)</th>
<th>Generalizations (Rules)</th>
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<tr>
<td><strong>Method:</strong> Machine learning</td>
<td><strong>Method:</strong> Machine learning w/ simulations</td>
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<td><strong>Examples:</strong></td>
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<td>• IRS decisions about who to audit</td>
<td>• Treasury macroprudential rules</td>
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<td>• FAA determinations of pilot fitness</td>
<td>• Real-time changes to high-speed securities trading</td>
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Table 1. Applications of Machine Learning in the Administrative State

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<th>Role of Machine Learning in Agency Decision-Making</th>
<th>Type of Administrative Action</th>
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<td>Supportive</td>
<td>“Discretionary”</td>
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<td>Determinative</td>
<td>Adjudication</td>
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- Adjudicating by Algorithm
- Rulemaking by Robot

Example: Regulatory Inspection Targeting

• Targeting inspections of hazardous liquid/gas pipelines by predicting the risk of accidents

• Current approach by Pipeline & Haz. Materials Safety Administration within Dept. Transportation:
  • Regression analysis – identify co-variates of risk
  • Human officials make judgment calls on targeting

• Possible future approaches:
  • Machine learning more accurately predicts risky operators
    • Uses large amount of inter-agency data on individual operators
      • E.g. IRS tax reporting, OSHA workplace violations, EEOC workforce diversity
  • Build a program that automatically runs shut-off valves
Example: Real-Time “Rulemaking”

- City of Los Angeles’s “Automated Traffic Surveillance and Control” System

“The computer system, which runs software the city itself developed, analyzes the data and automatically makes second-by-second adjustments, adapting to changing conditions and using a trove of past data to predict where traffic could snarl, all without human involvement.”

Ian Lovett, NY Times, April 1, 2013 (emp. added)
Nondelegation

- Unconstitutional for Congress to give agency authority to implement machine learning?
  - NOT LIKELY
    - Delegations require an “intelligible principle”
    - Algorithms’ objective functions necessarily are sufficient

- Is machine learning akin to an unconstitutional delegation to a private entity?
  - NOT LIKELY
    - Algorithms do not bring with them their own biases or self-interests, like a private actor could
    - Algorithms function subordinately to human gov’t officials
    - Algorithms amount functionally to a measurement tool
Due Process

• Is a hearing needed with a human decision-maker? 

**NOT LIKELY.** Must balance:

(1) **Private interests:** [exogenous to machine learning]

(2) **Accuracy of procedure:** *Machine learning should help!*
  • But question about error rates: statistical measures or reversal rates?

(3) **Costs of procedure:** *Machine learning should reduce!*

• But may need statistical experts to review algorithms
  • Need to ensure a “full and fair hearing”
  • Technicality of algorithms may call for rulemakings about algorithmic adjudication
Anti-discrimination

• Would inclusion of trait-related variables represent unconstitutionally disparate treatment?

**NOT LIKELY**

• Provides no direct evidence of discriminatory intent
  - No giving or withholding categorical “preference based on” class membership

• Provides no circumstantial evidence of intent
  - Predictive nature allows an agency “to articulate some legitimate, nondiscriminatory reason” under a burden-shifting approach
Transparency

• Will regulating by robot offend the APA’s demand for reasons under arbitrary and capricious standard?  
  NOT LIKELY  
  • Will require disclosure of “the assumptions and methodology used in preparing” the algorithms (Sierra Club v. Costle)  
  • But, courts generally defer to agencies on complex matters (Baltimore Gas & Electric)

• FOIA may allow withholding of algorithmic specifications for law enforcement purposes or for protection of trade secrets

• Agencies could engage in “good practices,” like disclosing developmental algorithms and supplementary output
The Merits of Machine Learning

- Despite alarm, its responsible use by federal agencies should withstand legal muster—at least under prevailing doctrine.
- Yes, safeguards and oversight will be required...but this is true for much of what government does.
- Government itself is “algorithmic,” but at times chaotic. *Machine learning can do better in some cases.*
- On balance, governmental use of machine learning merits cautious optimism.