Artificial Intelligence and (Human Rights) Law

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Artificial Intelligence and Law

- AI & Law is an interdisciplinary study of research focused on
  - Computational modeling of legal knowledge and reasoning
  - Designing systems that support lawyers in the performance of different tasks
  - Testing the potential of computational models using law as illustrative material
  - Not to be confused with „Law and AI” research which investigates legal implications of the development and use of inteligent systems

The Purpose of this Presentation

- review of the main problems in the field of computational modeling of legal reasoning and computational legal tasks performance support
- Identification of the potential threats to human rights arising from the (potential) use of inteligent systems in the sphere of justice
- formulation of a paradox following from the application of intelligenst systems in the field of human rights

Justification of Legal Decision

- There is a current fact situation (cfs) and a space of possible decisions
- Decisionmaking process – the field of psychology / cognitive science
  - explanatory theories
- Justification of a decision – the field of legal theory
  - Descriptive / normative / analytical theories

Problems of Judicial Reasoning

- The validity problem: reconstruction of a potential basis for a justified decision from the relevant sources
- The evidence problem: reasoning with and about legal evidence, assessment of probabilities, burden of proof, standards of proof
- The interpretation problem: understanding of legal sources – dealing with ambiguity, vagueness, open texture, values
- The subsumption problem: matching the description of the cfs with the law
- The choice of consequences problem

Computational Models of Legal Reasoning - timeline (1)

- 1970 – the idea of a (rule-based) legal expert system
- 1980s - the dominance of classical rule-based approach, the emergence of case-based approach
- 1987 – HYPO: case-based reasoning systems paradigm
- 1990s (first half) – hybrid systems, the development of defeasible logic based systems
- 1990s (second half) – the emergence of argumentation systems as a new paradigm
- 1990s in general – the development of legal ontologies

Computational Models of Legal Reasoning - timeline (2)

- 2000-2010 dominated by
  - The development of legal ontologies and reasoners based on Semantic Web technology
  - Further development of argumentation systems
  - The rise of ML approach for legal prediction and classification problems
- 2010-now
  - Dominance of the ML approaches
  - Towards argumentation mining
  - The problem of how to connect ML tools with computational models of legal reasoning
  - Emerging LawTech applications

The Great Gap

Computational Models of Legal Reasoning

- require preparation, validation and maintenance of a formalized knowledge base
- limited learning and scalability
- step by step reasoning expressible in language – high understandability
- resemble the structure of legal justification

ML Classification and Prediction Systems

- operate on the documents expresses in natural language
- learning capacity is the core of the system’s operation
- limited understandability (to different extents, depending on the model)
- perform tasks which do not have (almost) anything in common with legal justification

Possible Solutions

- ML models operation output as the set of premisses for the computational models of legal reasoning
- Training the ML models with the use of annotation which employs the elements us justificatory reasoning
- Automated generation of justificatory theories + human evaluation

Potential Benefits

- Descrease of duration of judicial proceedings
  - Justice delayed in justice denied
- Cost reduction (?)
- Elimination of (certain types) of mistakes
  - Better information retrieval
  - Ordering of information
  - Reduction of contradictions or non sequitur
  - Better assessment of probabilities
  - Reduction of human bias
  - Reduction of simple errors following from imperfect memory and limited attention

Risks and Problems

- All: Institutional inertia and opportunism

- SAI: propagation of errors present in the knowledge base
- SAI: limited context sensitivity

- ML: propagation of errors present in the dataset
- ML: algorithmic discrimination
- ML: reduced understandability

Human Rights

- A doctrine based on the idea of human dignity as the source of fundamental rights
- More than 100 international legal instruments
- European Convention of Human Rights (Council of Europe)
- Charter of Fundamental Rights of the European Union

Selected Rights

- Right to life (art. 2 ECHR, art. 2 CFREU)
- Respect for private life (art. 7 CFREU, art. 8 ECHR)
- Protection of personal data (art. 8 CFREU)
- Equality and non-discrimination (art. 15 ECHR, art. 20 and 21 CFREU)
- Right to health care (art. 35 CFREU)
- Effective remedy and fair trial (art. 6 ECHR art. 47 CFREU)

Open Questions

- Influence of the application of the IS in the judiciary on the right to a fair trial and non-discrimination
  - There exist predictive systems which perform well aso in the field of human rights law!
- Right to life and protection of health – applications of IS in the field of medicine; industrial applications
- Respect for private life – Internet services and prospective VR
- Employment and HR – non-discrimination

Paradox of Judicial Applications of IS

- The extensive dataset of documents and the complexity of the modern world render it more and more difficult to provide access to justice
- Especially in the environments changing on a fast pace, eg information technology
- It seems impossible to cope with these problems without the extensive application of IS in the field of the judiciary
- Including the cases concerning the tools supporting the judiciary

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Many thanks for your kind attention