Ethico-legal Governance

AI in Employment

Ethics of AI - Summer Semester 2021

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Outline:

- About
- Symbolic AI
- Ethico-legal Governance
- AI in Employment as high risk Systems
- The Reasoning Process
- Deontic Logics
- Ethical reflections
- Challenges
- Roadmap

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About:

- Ethico-legal governance based on symbolic logic for AIs
- The possibility of encoding legal constraints in symbolic AI
- AI in employment:
    - Automated decision making in hiring
    - Exploring possible levels of governance based on symbolic AI
    - Ethical dimensions

Symbolic AI

- Reasoning oriented field
- Solving classical AI problems of:
  - Solving mathematical problems
  - Rules and Ontologies
  - Logical inference
- **Reasoning Capabilities**
- **Explicit Symbolic Programming**

Ethico-legal Governance

What is Ethico-legal Governance?

- Governance
  - Set of processes and abilities
- Ethical Governance
  - Governing through ethical values
  - High standards of performance
  - Responsibility

https://ai.wharton.upenn.edu/wp-content/uploads/2020/12/ai-governance.jpg

Ethico-legal Governance

- Explicit ethico-legal governance of AIs based on symbolic AI
  - Encoding ethical and legal constraints in symbolic logics

Ethico-legal Governance

- Explicit ethico-legal governance of AIs based on symbolic AI
  - Encoding ethical and legal constraints in symbolic logics

  - Improving the degree of accountability and explainability
  - Increasing the autonomy level in selecting the suitable actions ethically
  - Reducing the harms could be caused by AIs

AI in Employment

EUROPEAN COMMISSION

Automated Decision Making in Hiring

EU proposal for regulation, 2021

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ANNEX III
HIGH-RISK AI SYSTEMS REFERRED TO IN ARTICLE 6(2)

Relevant Legal Constraints

Article. 22 GDPR:

- Right not to be subject to a decision based solely on automated processing.
- **Unless** the decision is necessary for entering into a contract between the data subject and a data controller.
- Implementing suitable measures is obligatory at least human intervention for evaluation
- The decisions shall not be based on special categories of personal data Art. 9 **unless** it is necessary for reasons of substantial public interest.

Reasoning Process

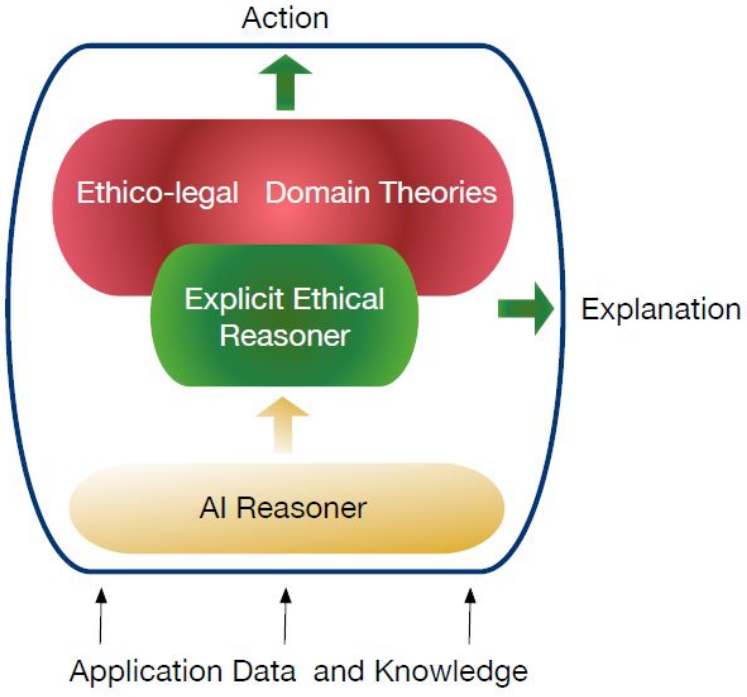


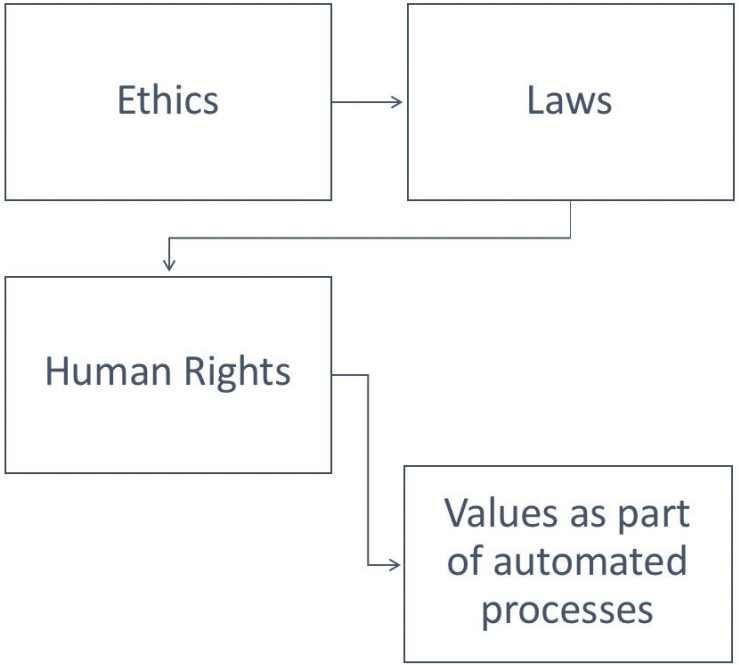
Figure from: Benzmüller, C., Parent, X., & van der Torre, L. (2020). Designing Normative Theories for Ethical and Legal Reasoning

Deontic Logics

Need for formalized values

-> Deontic logics is a branch of logic regarding e.g.

- permissible (permitted): PE
- impermissible (prohibited): IM
- obligatory (must, ought): OB



Implementation

Combination of logics:

- **Deontic Logics:**
  - Standard Deontic Logic (SDL)
  - Dyadic Deontic Logic (DDL)
- **Mathematical Logic:**
  - First-order logic
  - Higher-order logic (HOL)
    - set theory
    - quantifications over properties allowed
    - based on simply typed λ-term
    - shorter proofs than in first order logic

Reflection in an ethical context

- Technical reflections:
  - Transparency and explainability: ‘reason of reason’
  - Recommended actions /decisions based on ethical and legal values
  - Human intervention: decisions have to be evaluated by humans

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Reflection in an ethical context

- Social reflections:
  - Wide socio-technical context
  - Information about decisions
  - Contestability: users' right to argue against decision
  - Data protection
- Research reflections:
  - Interdisciplinary collaboration
  - Broader ethico-legal projects
  - Further ethics and articles

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Challenges

- Clarity of the legal text
- Personal data
- Applying suitable measures
- Definition of actions
- Consistency with other articles of GDPR
- Choosing the deontic logic
- Validity / Truthfulness

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-schieben-2127669/

Roadmap

Research Phase
Idea of the project
Ethical values
Possible solution

Embedding Phase
Comparing different deontic logics
Implementation

Concretization Phase
Approaching to equivalent
ethico-legal rules and fitting logics

Reporting Phase

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Thank you!

Are there questions?

What do you think about our project?

What could be possible problems?