

IMPACT OF LEGAL REQUIREMENTS ON EXPLAINABILITY IN MACHINE LEARNING

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INTRODUCTION

Several European laws impose explainability requirements. Their implications for machine learning are not always clear. In that perspective, we analyze explanation obligations imposed for private and public decision-making, and study how they can be implemented by machine learning techniques.

LEGAL REQUIREMENTS IN B2C

1. Main parameters of ranking:

- obligation to provide the “main parameters” of ranking and their “relative importance”
(Directive 2011/83 on Consumer Rights, art. 6(a), and Regulation 2019/1150 on promoting fairness and transparency for business users of online intermediation services, art. 5)

2. Criteria relied on to reach a decision:

- obligation to provide “the criteria relied on in reaching the decision”
(Guidelines on automated individual decision-making and profiling, interpreting Regulation 2016/679 (i.e. General Data Protection Regulation, GDPR))

3. Rationale behind a decision:

- obligation to provide “the rationale behind the decision”
(Guidelines on automated individual decision-making and profiling, interpreting the GDPR)

4. Information on the system used:

- obligation to provide “information [...] about its algorithmic trading and the systems used for that trading”
(Directive 2014/65 on Markets in Financial Instruments, art. 17)

LEGAL REQUIREMENTS IN G2C

1. Administrative decisions:

- “Obligation of the administration to give reasons for its decisions”.
(Charter of Fundamental Rights of the European Union, art. 41)
- This is interpreted as an obligation to provide all factual and legal grounds on which a decision is based

2. Judicial decisions:

- “Judgments of courts and tribunals should adequately state the reasons on which they are based.”
(European Court of Human Rights, cases *Salov v. Ukraine* (request n. 65518/01), *Boldea V. Romania* (request n. 19997/02), *Gradinar V. Moldova* (request n. 7170/02))
- This is interpreted as an obligation to provide all factual and legal grounds, and to answer the arguments made by the parties

RATIO LEGIS

Two main objectives are pursued by explanation obligations:

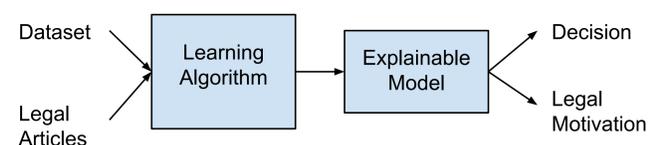
1. allowing the recipients of a decision to understand it and act accordingly.
2. allowing the public authority, before which a decision is contested, to exercise a meaningful effective control on the legality of the decision.

4 LEVELS OF REQUIREMENTS IN B2C

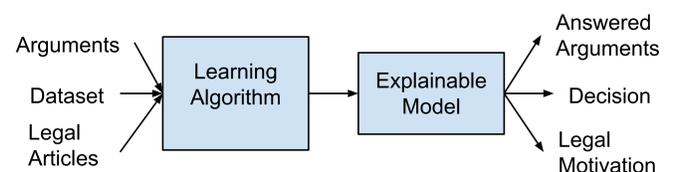
1. **Main features:** e.g. weakly/strongly relevant features
2. **All features:** e.g.
 - importance through out-of-bag error
 - perturbing feature values
 - SHAP
3. **Combination of features:** e.g. LIME
4. **Whole model:** interpretable models

ADMINISTRATIVE AND JUDICIAL DECISIONS

Stronger Requirements (G2C): Administrative Decisions



Stronger Requirements (G2C): Judicial Decisions



CONCLUSION

Need for an interdisciplinary conversation:

- Legal scholars: better understanding the potential and the limitations of ML models
- ML scholars: better understanding the objectives and ambiguities of the law

REFERENCES

- Adrien Bibal, Michael Lognoul, Alexandre de Streel, and Benoît Frénavy. Legal requirements on explainability in machine learning. *Artificial Intelligence and Law*, Forthcoming
- Andrew D Selbst and Solon Barocas. The intuitive appeal of explainable machines. *Fordham Law Review*, 87:1085–1139, 2018