

Abstracts and Bios of **speakers**

***Bridging the gap between Logic and
NLP-based Approaches for
Automating Regulatory Compliance***

13 September 2022

3:00 – 5:00

The Student Hotel Maastricht

Sphixcour 9A

6211 XZ Maastricht

<https://maastrichtuniversity.zoom.us/j/93048607296?pwd=WklzQkQrdnFJdEc2MC95R0phb1>

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Livio Robaldo

Title

Taking stock of available technologies for compliance checking on first-order knowledge

Abstract

This research compares some of the main compliance checkers used in recent literature. The focus is on formalizations at the first-order level. Past literature mostly focuses on the propositional level, which, however, is of little usefulness for concrete LegalTech applications where compliance checking must be enforced on (large) sets of individuals. This work formalizes a selected use case in the considered reasoners and compares the implementations. The comparison highlights that lot of further research still need to be done to integrate the benefits featured by the different reasoners into a single standardized first-order framework. All source codes are available at <https://github.com/liviorobaldo/compliancecheckers>

Bio

Livio Robaldo is a Senior Lecturer in Computational Law specialized in Natural Language Processing and Knowledge Representation. Livio earned his Ph.D. in Computer Science from the University of Turin in 2007. Afterwards, he worked as a PostDoc researcher at the University of Turin and the University of Luxembourg until 2020, when he got a Senior Lecturer position in Computational Law at the School of Law at Swansea University. He has authored many papers in international journals and conferences and had an active role in the writing and management of research projects in Artificial Intelligence and Law, also in collaboration with industry, among which three H2020 Marie Skłodowska-Curie projects.

Réka Markovich

Title

On the Necessity and Some Difficulties of Using Logic for Modelling Law

Abstract

In the opening statement, I will highlight some theoretical difficulties of modeling law with logic and its hard dependence on a thorough understanding of legal dogmatics and the legal language use. At the same time, though, I will argue that logic cannot be omitted from automating law-related processes like compliance checking.

Bio

Réka Markovich researches computational legal theory and studies its applications in Artificial Intelligence and legal reasoning. Her focus areas are legal knowledge representation, normative multi-agent systems, deontic logic, machine ethics, and XAI. She has degrees in law, communications, and in logic, and a Ph.D. in logic. Currently, she works as a research associate at the Department of Computer Science at the University of Luxembourg where she is responsible for the AI&Law projects of the Individual and Collective Reasoning group in the Interdisciplinary Lab for Intelligent and Adaptive Systems, and she represents Luxembourg on the board of the Benelux Association for AI.

Monica Palmirani

Title

Hybrid AI for detecting legal knowledge and deontic operators

Abstract

The talk presents a Hybrid AI methodology for using NLP and AI techniques jointly with LegalXML information coming from the Semantic Web approach. We take advantage of the symbolic AI, combining the semantic information from the legal knowledge annotated in the XML files and to apply on the top different NLP and AI methods. This pipeline permits to foster the semantic and to arrive at a better legal interpretation of the NLP and AI elaboration.

Bio

Monica Palmirani is full professor in Computer Science and Law and Legal Informatics at University of Bologna, School of Law. She co-chairs the LegalDocML and the LegalRuleML. Since 2013 she serves on the OASIS LegalXML Steering Committee. In 2015, she was recognized as an OASIS Distinguished Contributor. She was member of Board of Directors of OASIS from 2016 till 2018. Her research fields include XML techniques for modelling legal documents in structure as well as in aspects connected to legal knowledge, including logic rules and legal ontologies, and ICT-enhanced legal drafting techniques using artificial intelligence techniques. She is also the scientific coordinator of the Legal Blockchain Lab. She has published more than 120 papers and she has been chair of several international conferences, editor of book series and member of the scientific committee of "AI and Law" Journal. She is vice-president of the IAAIL (International Association for Artificial Intelligence and Law). She is Director of the International PhD programme "Law, Science and Technologies" MSCA-ITN. She has been winner of the ERC Advanced Grant of the European Research Council for five years of ground-breaking topics with a funding of 2.5M of Euro.

Ilias Chalkidis

Title

Regulatory Compliance through Document-to-Document Matching: A case study on EU-UK transpositions

Abstract

Major scandals in corporate history have urged the need for regulatory compliance, where organizations need to ensure that their controls (processes) comply with relevant laws, regulations, and policies. However, keeping track of the constantly changing legislation is difficult, thus organizations are increasingly adopting Regulatory Technology (RegTech) to facilitate the process. To this end, in the distant year of 2021, we examined regulatory information retrieval (IR) via document-to-document matching; a first preliminary step to identify the few relevant documents in a pile of many. In this context, we formed a testbed compiling two symmetric datasets relying on the transposition of EU directives by UK legislation, and experimented with both traditional and modern IR methods leading to interesting findings. In my talk, I will present this work pointing out the unique challenges of regulatory IR, which are valid for legal IR in general. Concluding, I will retrospectively map out what we could do differently today examining the most recent literature given the rapid development of NLP technologies year-by-year.

Bio

I am a post-doctoral researcher at the Department of Computer Science at University of Copenhagen (CoAStAL NLP Group). I received my Ph.D. from the Department of Informatics at Athens University of Economics and Business, which was recently awarded with the best 2020-2021 doctoral thesis award by the Hellenic AI Society (EETN). My main expertise is in Legal Natural Language Processing (LegalNLP); a recent notable achievement was the release of LegalBERT, a family of legal-oriented language models with more than 150 citations so far and more than 400K downloads per month. I have been a reviewer for ACL venues (ACL/EMNLP/NAACL 2020-2022) and reputable journals, such as AI & Law, PeerJ, and Computer Speech & Language. I am also part of the organizing committee of the Natural Legal Language Processing (NLLP) workshop.

Luigi Di Caro

Title

When (and where) do NLP and ML still struggle in legal compliance? The cases of multilinguality and analogical reasoning

Abstract

Legal sources and data continue to rise and impact on tasks such as the exploration, the understanding and the retrieval of relevant documents or individual text passages required for compliance, analysis and decision making.

While a crucial issue regards the structuring of legal knowledge through the creation/proposal of standards and data formats, in this talk a couple of other points will be discussed: multilinguality and analogical reasoning.

While terms and concepts may be currently translated in different languages through NLP or multilingual vocabularies, (legal) concepts show different (and untranslatable) semantic shapes and boundaries across countries and jurisdictions. This demands novel methodologies and technologies able to identify fine-grained and aspect-based similarities as well as differences across languages and transnational concepts.

Secondly, analogical reasoning refers to the human natural ability to infer knowledge (or similarity) between incomplete and example-based concepts and definitions. While recent NLP and ML techniques represent powerful tools for an accurate encoding of the expressed semantics, they still strive when dealing with incomplete and approximate expressions requiring analogical reasoning over external rather than (legal) common-sense.

The talk will briefly present some cases and possible future directions.

Bio

Luigi Di Caro is Assistant Professor (Associate Professor from October 1st, 2022) at the University of Turin, Computer Science Department. His main research interests include Data Mining and Computational Linguistics, with a particular focus on their application in the Legal Informatics field. He worked both in academic and in business contexts, being coordinator and partner of several research projects at national and European levels (e.g., InterLex, Cross-Justice, ADELE).