AI4LEGS

LEGAL-INFORMATICS APPROACHES TO LMS & LAW IN LEGISLATION

October 25, 9.00 – 12.30
School of Engineering, University of Bologna
Viale del Risorgimento, 2 – Bologna (Italy)
A2.8
(CHECK IN THE APP WHOVA the location – some changes are possible)

Integrating AI into legislative processes is progressively reshaping traditional practice, offering greater efficiency and accuracy. However, its use in democratic institutions requires careful consideration of legal theory, ethics, and design choices. This tutorial examines how AI is transforming the legal sector, focusing on how **Large Language Models (LLMs)** enhance legal research and practice in the context of **legislative decision-making**. It introduces AI experts to core legal reasoning and evaluation methods, and legal experts to foundational aspects of AI and LLMs, while also presenting **use-cases in Parliaments** with invited speakers. Participants will become familiar with legal processes and aware of current AI applications. Attendees will gain insight into **Natural Language Processing, Machine Learning, and LLM-based techniques** applied to legal information systems, as well as the ethical and regulatory challenges related to deploying AI in law. The tutorial will also address **explainability (XAI)** and the importance of transparent, human-centered visualization of results. The sessions will explore AI for **legal information retrieval, automated drafting, compliance checking, and legal information extraction** for legislation, alongside **visualization** techniques for explainable outputs. Live demonstrations will showcase AI-driven tools for legal research and legislative drafting, highlighting both their potential and limitations under the AI Act and relevant ethical principles.

PROGRAMME:

9.00-9.20 <u>FOUNDATIONS OF AI IN LEGAL PRACTICE</u>
PROF. MONICA PALMIRANI
UNIVERSITY OF BOLOGNA

- Introduction to the peculiarities of the legal domain and the legal language and its relationship with AI. The Hybrid AI methodology.
- The Akoma Ntoso (AKN) standard: the relevance of machine-readable, high-quality legal data
- Overview of AI technologies applied to the legal domain: how AI applications transform legal research, practice, and decision-making

9.20-9.40 <u>AI TECHNIQUES AND TOOLS FOR LEGISLATIVE DOMAIN: OPPORTUNITIES AND LIMITATIONS</u>
DR. MICHELE CORAZZA
UNIVERSITY OF BOLOGNA

- NLP in Legal Contexts: exploring the limits of NLP methods in analyzing legal documents and extracting pertinent information, discovering hidden information, mapping policies with the legislation
- ML applications in Legal Contexts: exploring the representation of legal texts in AI systems in probabilistic models
- Introduction to Large Language Models (LLMs) in the legal domain: understanding the role of LLMs in processing and generating legal information

9.40-10.00 <u>XAI IN THE LEGAL DOMAIN AND VISUALIZATION TECHNIQUES</u>
PROF. FABIO VITALI
UNIVERSITY OF BOLOGNA

- HCI and XAI visualization techniques: exploring some techniques for XAI in legal domain
- Legal design methodology for presenting AI results and guarantee the autonomy of the decision-makers

10.00-10.20 <u>ETHICAL AND REGULATORY CONSIDERATIONS</u>
DR. SALVATORE SAPIENZA
UNIVERSITY OF BOLOGNA

- Ethical implications: discussing bias, transparency, and accountability in AI applications for legislation
- Legal implications: Understanding the EU AI Act, GPAIs, systemic risks, and their impact on legislation.
- Technical mitigation measures and possible approaches to AI modelization.

10.30-11.00 <u>COFFEE BREAK</u>

11.00-12.00 <u>DEMOS: PRACTICAL APPLICATIONS OF AI IN LEGAL TASKS</u>

- AI4AKN: Didier Hardy, Nasredine Cheniki and Mauro Colavincenzo, Publications Office of the European Union

- HyperModeLex and GENAI4LEX-B: Michele Corazza, Generoso Longo University of Bologna

12.00-12.30 DISCUSSION ON FUTURE TRENDS AND CHALLENGES

Discussant: Guido Governatori, Central Queensland University, Rockhampton

- What solutions? Exploring advancements (Hybrid and Neurosymbolic AI) in AI and their potential applications in law.
- Which role for the symbolic AI in the Legislative domain?

ORGANISER:
Monica Palmirani, University of Bologna, ALMA AI. 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 president of the IAAIL (International Association for Artificial Intelligence and Law), pointed out as President for the period 2024-2025.** She is Director of the International PhD programme "Law, Science and Technologies" MSCA-ITN. She has winner of the **ERC Advanced Gran**t of the European Research Council for five years of ground-breaking topics with a funding of 2.5Ml of Euro. She is also principal investigator of **Jean Monnet Module on Legal Design**.

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