



HYPERMODELEX



AI for Law and Governance - ALMA-AI LLM per la conoscenza giuridica

Prof. Monica Palmirani
University of Bologna, ALMA AI
President of International Association of
Artificial Intelligence and Law

17th April 2024



ChatGPT is now writing legislation. Is this the future?

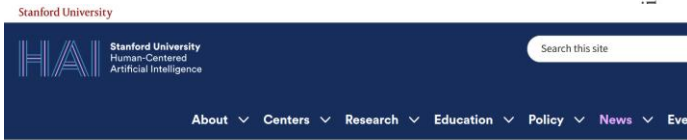
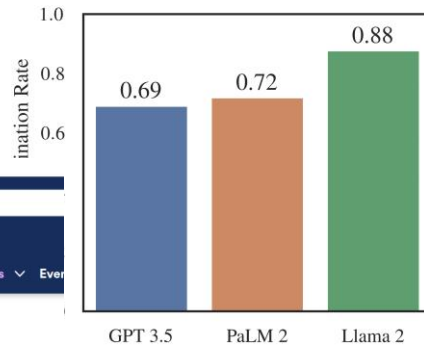
Analysis by Cristiano Lima
with research by Aaron Schaffer

January 23, 2023 at 8:55 a.m. EST

But in what may be a first, a Massachusetts state senator has used a [surging new tool](#) to help write a bill aimed at restricting it: ChatGPT, the artificial intelligence chatbot.

Lawyer apologizes for fake court citations from ChatGPT

By Ramishah Maruf, CNN
Updated 3:28 PM EDT, Sun May 28, 2023



Law, Regulation, and Policy

Hallucinating Law: Legal Mistakes with Large Language Models are Pervasive

A new study finds disturbing and pervasive errors among three popular models on a wide range of legal tasks.

Jan 11, 2024 | Matthew Dahl, Varun Magesh, Mirac Suzgun, Daniel E. Ho

GPT-4 Passes the Bar Exam

Daniel Martin Katz^{1,2,3,4,*}, Michael James Bommarito^{1,2,3,4}, Shang Gao⁵, and Pablo David Arredondo^{2,5}

¹Illinois Tech - Chicago Kent College of Law (USA)
²CodeX - The Stanford Center for Legal Informatics (USA)
³Bucerius Law School (Germany)
⁴273 Ventures (USA)
⁵Casetext, Inc. (USA)
 *Corresponding Author: dkatz3@kentlaw.iit.edu

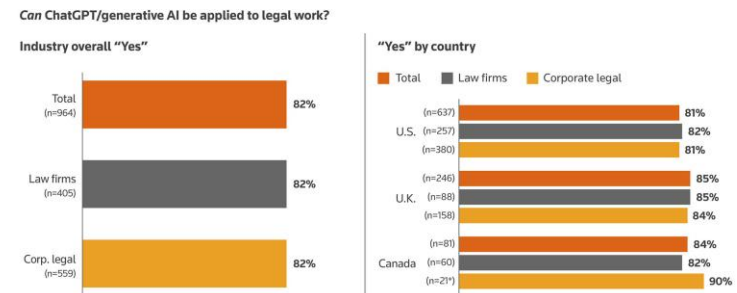
March 15, 2023 - Version 1.01
Paper Now Available on SSRN!

Parla il senatore che si è fatto scrivere un intervento in aula da ChatGPT

La provocazione dell'esponente di Azione-IV Marco Lombardo, che rilancia: "È adesso che bisogna parlarne"



Figure 2: The majority of legal professionals agree that ChatGPT and generative AI can be used for legal work.



Base: Aware of ChatGPT/generative AI OR use other forms of AI Total (n=964); Law firms (n=405); Corp. legal (n=559).
 * Caution - small base size. Source: Thomson Reuters 2023

Obiettivi

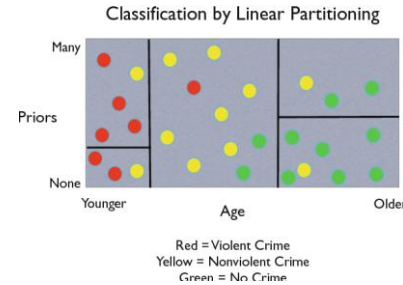
- Linguaggio giuridico costitutivo e prescrittivo, non solo descrittivo
- Gerarchia delle fonti
- Temporalità e giurisdizione
- Norme speciali e implicite

Utilizzare LLM per

- la «semplificazione legislativa» e favorire l'accesso
- il processo legislativo e l'iniziativa legislativa
- la governance delle policy e la misura degli effetti legislativi/giuridici
- task degli studi legali
- supportare le attività della giustizia (e.g., Pro.Di.GT.IT)



AI&Law



```
pragma solidity ^0.4.17;
contract SimpleStorage {
  uint storedData;

  function set(uint x) public {
    storedData = x;
  }

  function get() public view returns (uint) {
    return storedData;
  }
}
```



AI and Law

Programmazione logica – symbolic AI

Semantic Web e Knowledge representation

ML, Classificazione, clustering, NLP, predizione

Legal data analytics

Blockchain & Smart Contract

Rischi del LLM nel dominio giuridico

- **Granularità** vs **struttura**: il ML funziona a livello di frase e questo approccio non è in grado di collegare diverse parti del discorso semanticamente connesse (ad esempio, obbligo-eccezione, dovere-penalità)
- **Contenuto** vs **contesto**: il machine learning perde il contesto (ad esempio giurisdizione, parametri temporali)
- **Passato** vs. **Futuro**: il ML dipende dalle serie di dati passate (ad esempio, la nuova brillante soluzione non ha serie storiche)
- **Informazioni interne** vs. **esterne**: ML non considera le citazioni normative e giuridiche.
- **Statico** vs. **Dinamico**: i riferimenti normativi evolvono nel tempo (es. “art. 3” non è lo stesso per sempre)



when does the GDPR enter into force?

Data di entrata in vigore



The General Data Protection Regulation (GDPR) entered into force on May 25, 2018.



when does the GDPR enter into operation?

Data di operatività



The General Data Protection Regulation (GDPR) entered into operation on May 25, 2018. This means that from that date onwards, the GDPR became fully applicable and enforceable, and organizations were required to comply with its provisions regarding the processing and protection of personal data.



Timeless e senza giurisdizione

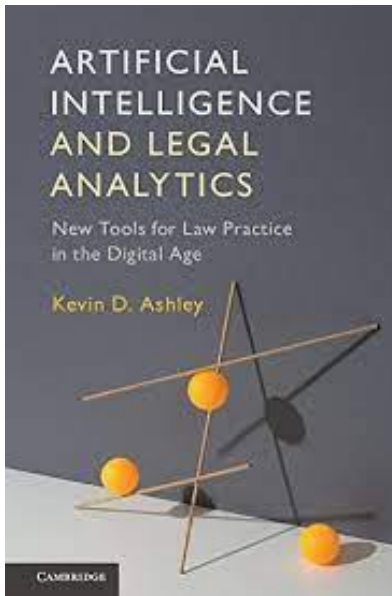


When has the GDPR started to be applied?



The General Data Protection Regulation (GDPR) started to be applied and enforced on May 25, 2018. This means that from that date onwards, organizations were required to comply with the GDPR's provisions regarding the processing and protection of personal data. The GDPR replaced the previous data protection laws in the European Union and introduced new requirements and standards for data protection and privacy.





Klaus Günther

From Normative to Smart Orders?

Abstract: The increasing penetration of new digital technologies, especially artificial intelligence, into almost all areas of society's life has led to the emergence of smart orders. These are orders that are designed to minimize or eliminate deviations from their norms through intelligent design and algorithmic operations. The article explains some examples of smart orders and shows that, at least in principle, a distinction can be made between algorithmically optimized, norm addressee-oriented prevention and addressee-substituting pre-emption of deviant behavior by digital technologies. The focus of the article is then on the question of whether and, if so, in what sense smart orders are still normative orders at all. In the course of the analysis, it becomes apparent that while legal orders and other normative orders pursue the goal of effective enforcement of their norms, they do not pursue the ideal of complete non-deviance. It becomes clear that one of the essential aspects of normative orders is that they are addressed to persons who must embrace them as autonomous and, at the



Digital-ready
policies



Law as Code

Evitare la “Black box”

EasyChair Terms of Service

The EasyChair Terms of Service have changed as part of EasyChair compliance with the GDPR providing a number of new services since the introduction of the previous version of the Terms. To continue using EasyChair you must agree to our new Terms of Service as shown below.

You must agree to our Terms of Service to continue using EasyChair.

You can **download** these Terms of Service by clicking on “Download”. To agree to these terms, tick the box below and click on “Continue”. If you **disagree** with these Terms [click here to log out](#).

I agree to these Terms of Service

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EasyChair Terms of Service

Thank you for choosing EasyChair!

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1.1 EasyChair Ltd (“we” or “us” or “EasyChair Ltd”), via its online web service EasyChair (“EasyChair” or “EasyChair Web Site”) <https://www.easychair.org> provides services that allow users:

- a) to manage document submission, reviewing, publishing, program generation, content management, registration, user management, email management and monitoring, and accounting for conferences, workshops, journals, books, special issues and any other events or publications; and
- b) to publish papers, articles, preprints, slides, presentations, videos, teaching material, programs of events, calls for papers and volumes and collections thereof.

(the “services”).

WE ASK THAT YOU READ THESE TERMS AND CONDITIONS OF SERVICE (THESE “TERMS”) CAREFULLY BEFORE USING THE SERVICE SINCE YOUR ACCEPTANCE OF THESE TERMS WITHOUT MODIFICATION. IF YOU DO NOT AGREE TO THESE TERMS, DO NOT USE THE SERVICE.

1.2 If you use the Service on behalf of a company, organisation, or other entity, then:

- a) “you” includes you and that entity, and
- b) you represent and warrant that you are an authorized representative of the entity with the authority to bind the entity to these terms, and that you agree to these terms on the entity’s behalf.

1.3 We reserve the right to update the Service at any time at our discretion with or without notice to you. Such updates are designed to improve, enhance and further develop the Service and may take the form of bug fixes, enhanced functions, new modules, or other forms. You agree to use the Service as updated.

1.4 Additional terms may apply to some of our services. For example, if you use our conference registration module, additional terms apply to your use of this module. All of these are referred to herein as the “Additional Terms”. You agree to use the Additional Terms only if there is no contradiction between what the Additional Terms say and what these terms say, then the Additional Terms shall take precedence in relation to that element of the Service.

2.1 We grant you a non-transferable, non-exclusive, non-commercial, royalty-free license and license to use the Service. It does not include the right for you (or any third party) to copy, adapt, modify, re-sell or repurpose any EasyChair Ltd product, service, or data or the EasyChair Web Site. If you are unclear about whether your use is acceptable under these terms, please contact us. The contact information will be available on the contact page of the EasyChair Web Site.

2.2 Your use of the Service does not create a partnership, joint venture or agency relationship or similar relationship between you and us.

2.3 You are expressly prohibited and shall not be allowed by third party to reproduce, redistribute, duplicate, copy, modify, decompile, disassemble, modify, sell, trade or re-sell the Service (including the EasyChair Web Site) for any purpose, unless you have been specifically permitted to do so in a separate agreement with EasyChair Ltd.

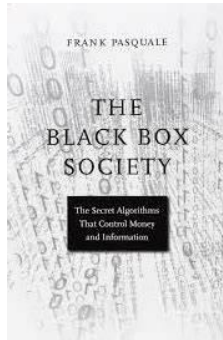
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2.5 You must not use the Service to advertise or promote any fictitious conference(s).

3. YOUR USE OF THE SERVICE

3.1 You represent that you are of legal age to form a binding contract and are not prevented from accessing or receiving the Service under any applicable jurisdiction.

3.2 You agree to only use the Service for lawful purposes and as permitted by these Terms.



What are your rights in respect of your personal data?

Your right of data access

8.1. You are entitled to receive a copy of your personal data that is in our possession (your right of data access).

Your right to erasure and rectification

8.2 You may request the deletion of personal data or the correction of inaccurate personal data (your right to erasure and rectification). Please note that we may keep certain information concerning you, as required by law, or when we have a legal basis to do so (e.g., our legitimate interest to keep the platform safe and secure for other users).

Your right to object to processing

8.3 You have the right to object at any time (i) to the processing of your personal data for the purpose of direct marketing, or (ii) to the processing of your personal data for other purposes on grounds relating to your particular situation (your right to object to processing). Please note that in the latter case, this right only applies if the processing of your personal data is based on our legitimate interest.

Your right to restriction to processing

8.4 You have the right to restrict the processing of your personal data (your right to restriction of processing). Please note that this only applies if (i) you contested the accuracy of your personal data and we are verifying the accuracy of the personal data; (ii) you exercised your right to object and we are still considering, as foreseen by the applicable law, whether our legitimate grounds to process your personal data in that case override your interests, rights and freedoms; or (iii) your personal data has been processed by us in an unlawful way but you either oppose the erasure of the personal data or want us to keep your personal data in order to establish, exercise or defend a legal claim.

Lawyer-readable

Human-readable

Trasparenza



“White box” approach in AI

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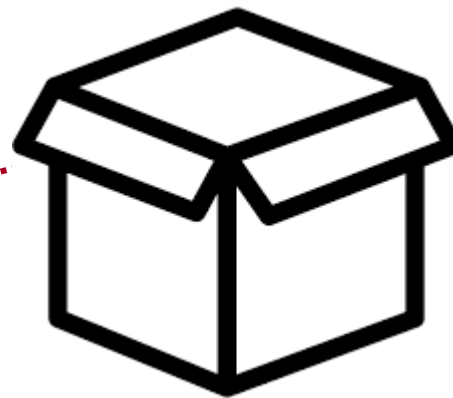


AKOMA NTOSO

Architecture for Knowledge-Oriented Management of African Normative Texts using Open Standards and Ontologies

OASIS LegalXML

LegalRuleML



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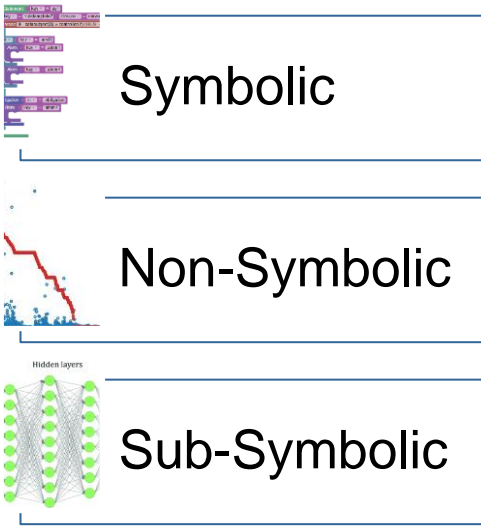
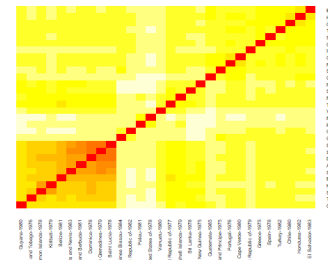
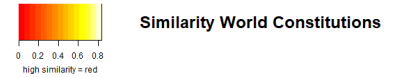
Lawyer-readable

Machine-readable

Human-readable



Hybrid AI for Legal Domain

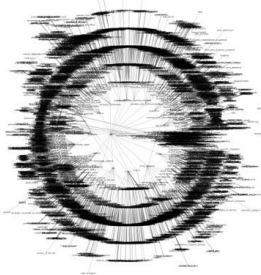
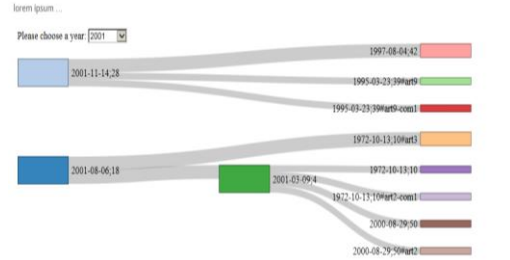
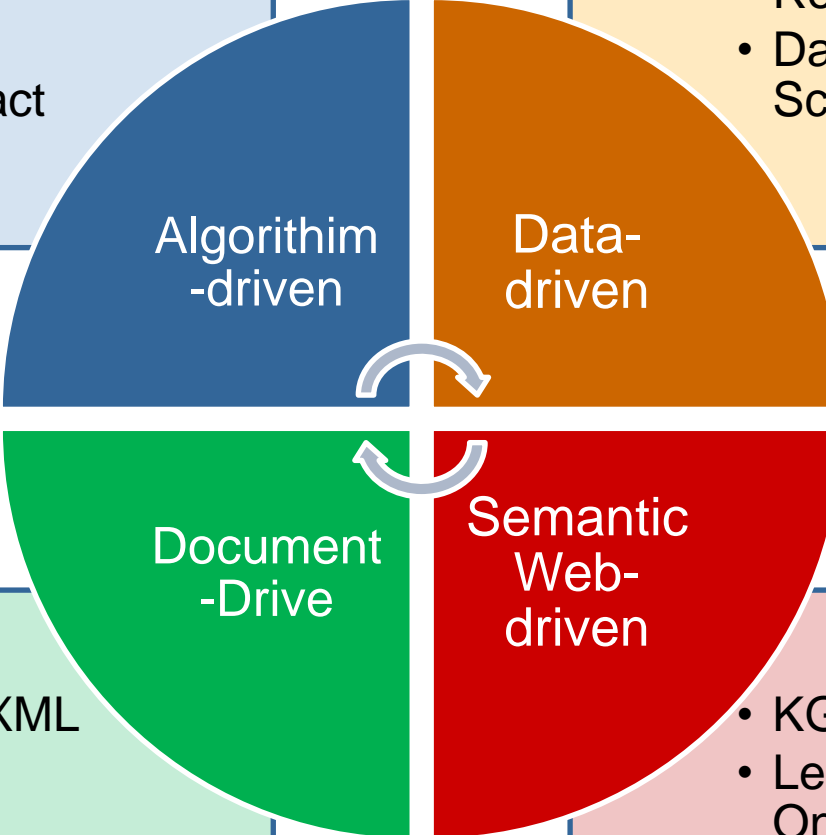


- AI
- Smart Contract

- Regression
- Data Science

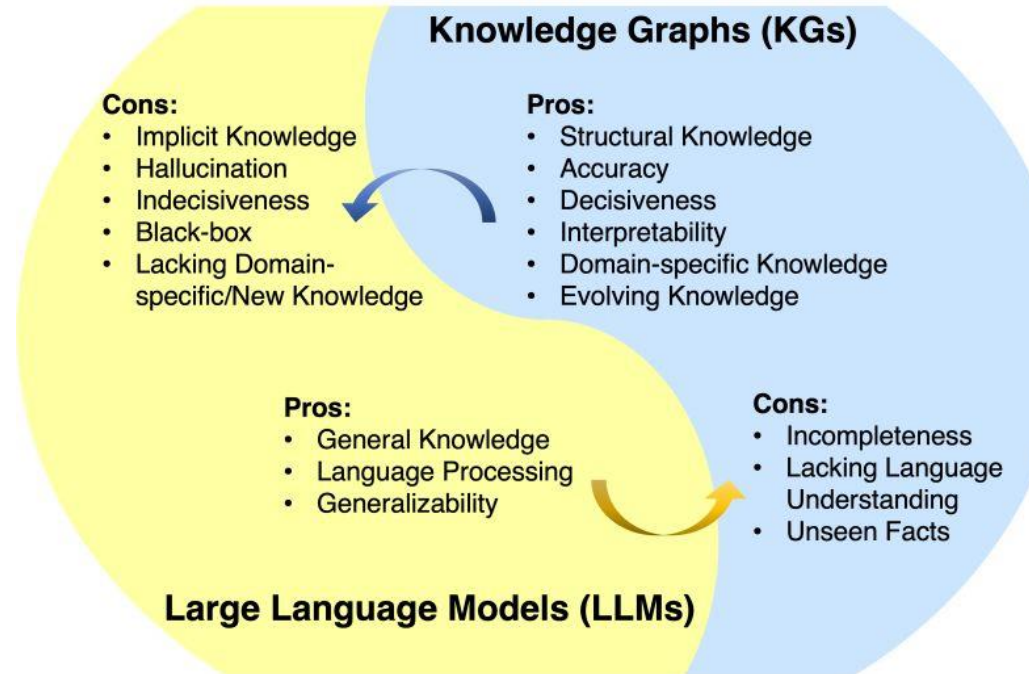
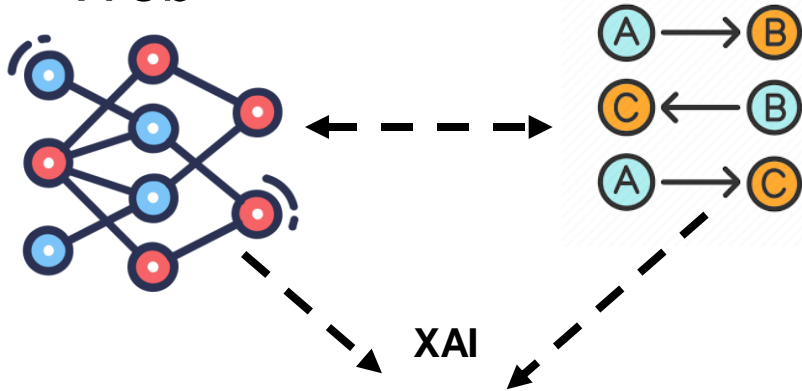
- LegalXML

- KG
- Legal Ontology



Neuro-symbolic e Web 4.0

Sub-Symbolic AI
Symbolic AI, Semantic
Web



Unifying Large Language Models and Knowledge Graphs: A Roadmap

[Shirui Pan](#), [Linhao Luo](#), [Yufei Wang](#), [Chen Chen](#), [Jiapu Wang](#), [Xindong Wu](#)

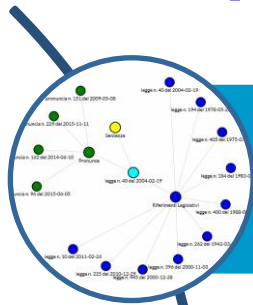
AI per il legal drafting

Study on 'Drafting legislation in the era of AI and digitisation' with EU Commission – Directorate General Informatics Unit B2 – Solutions for Legislation, Policy & HR

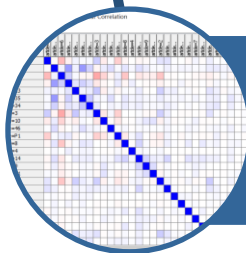


Legal Drafting in the Era of Artificial Intelligence and Digitisation

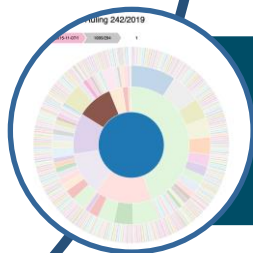
■ 4 use-cases



Legal Drafting Assistance

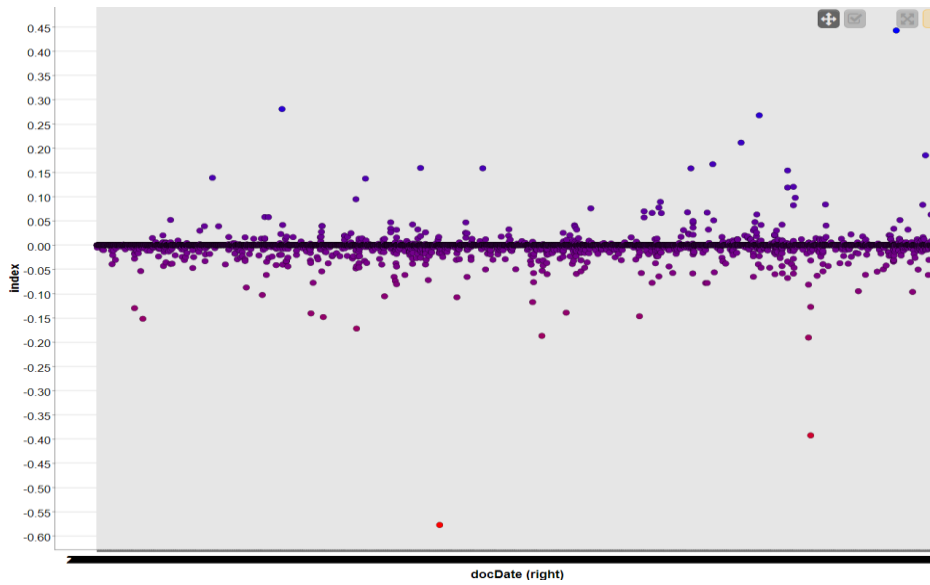


Decision support system

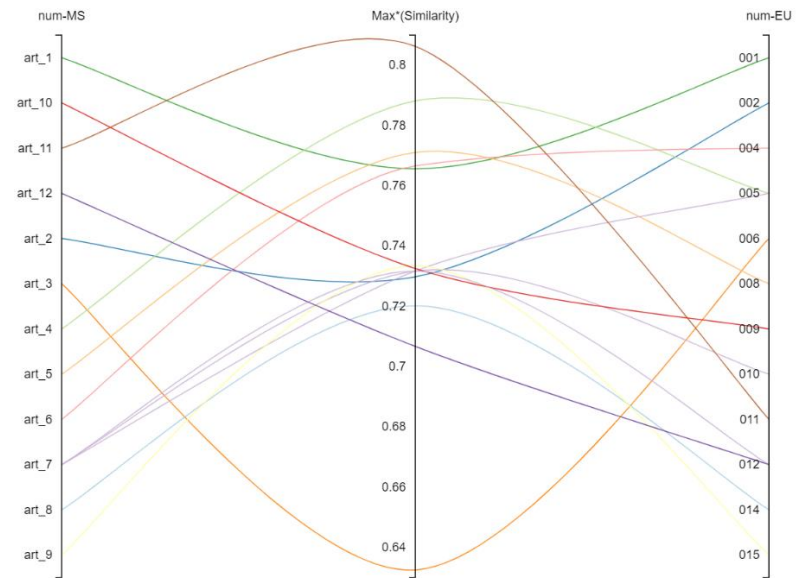


Legal corpus analytics

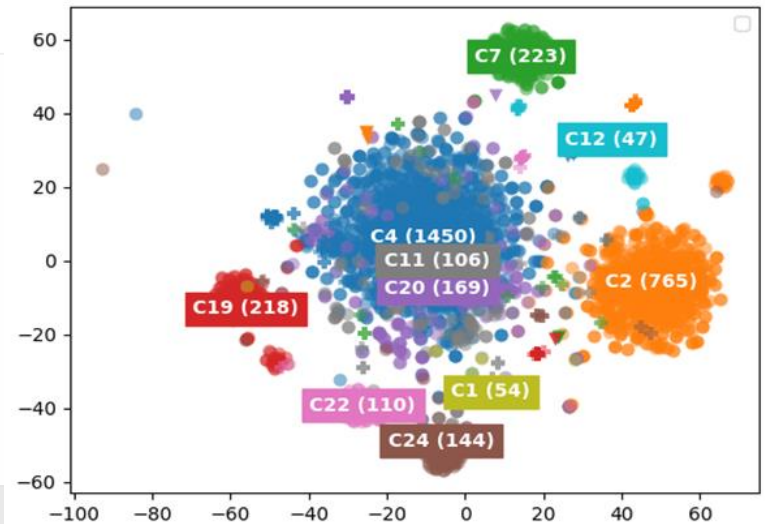
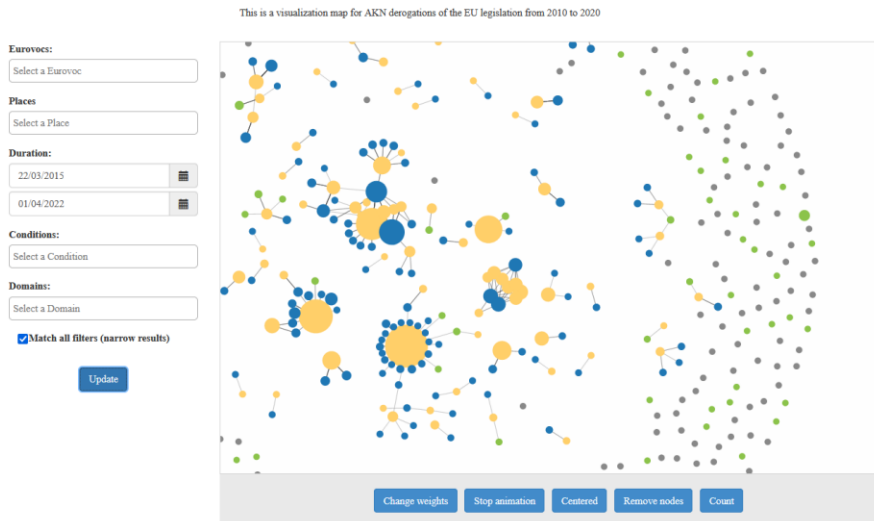
Esempi



2-gram distance

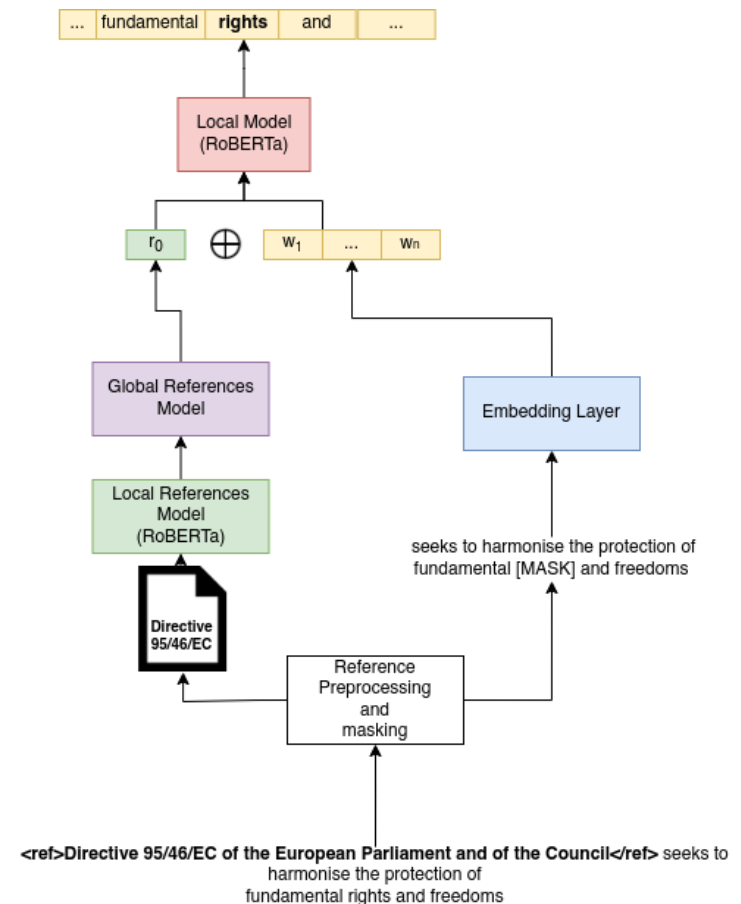


Analysis of the Derogations in EU Legislation using Network Analysis



Cosa stiamo facendo ora con LLM?

- Addestrando un **LLM** su Leonardo sui testi giuridici europei. reference aware, gerarchico – IR
- Generazione dei **preamboli** dei disegni di legge - retrieval augmented generation
- **ChatBot** conversazionale per migliorare la risposta di pertinenza dei documenti avendo un goal - **LegalTech**
- **Prompt** per creare emendamenti giuridicamente corretti partendo da un linguaggio non giuridico - **eParticipation**



L'uomo integrato nel processo

Human-in-the-loop
Human-on-the-loop
Human-in-Command

