



HYPERMODELEX



LegisTech: Artificial Intelligence in Legislaton

Paris, 6 November 2024

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OASIS



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

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"





OFFICE OF THE CLERK
UNITED STATES HOUSE OF REPRESENTATIVES

**Legislative Data Standards
Conference
22 May 20213**

H.E. Mr. Robert Reeves, Deputy Clerk, House of Representatives of the United States of America.

Introduction (cont'd)

Today's challenge is no longer
“*will* parliaments have publicly available documents”
but rather
“*how do* parliaments and legislative bodies
modernize their systems and workflows to utilize
today's newer technologies
to help citizens access
free and timely legislative and legal information ?”

eLegal evolution

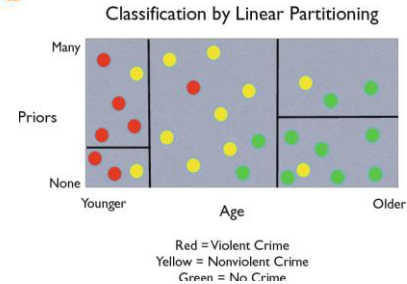


EUR-Lex

at4am



EU Open Data Portal



```
pragma solidity ^0.4.17;

contract SimpleStorage {
    uint storedData;

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

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



1990s

2000s

2010s

2020s

2030s

AI and Law

Logic programming – Symbolic AI

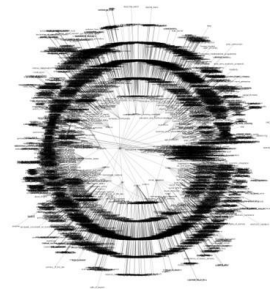
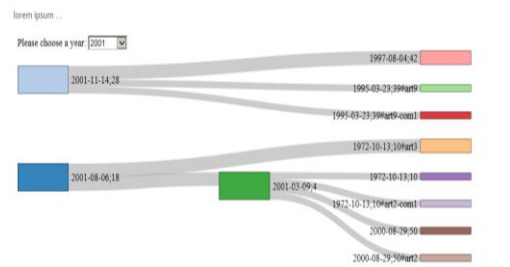
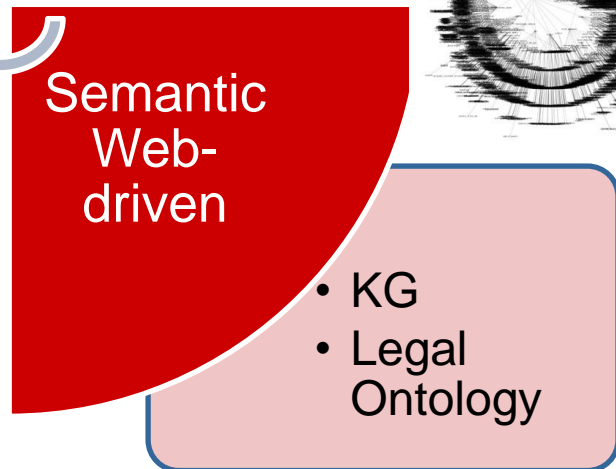
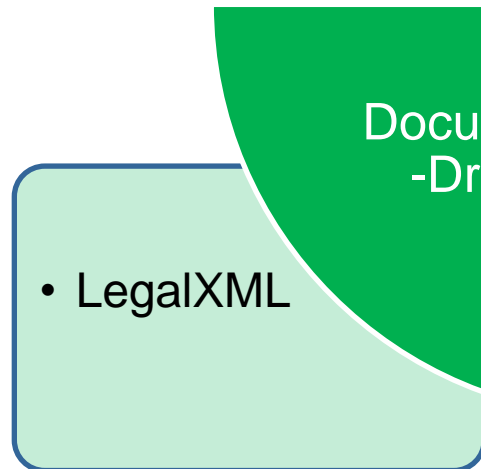
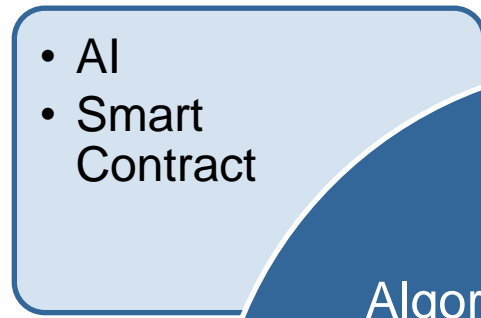
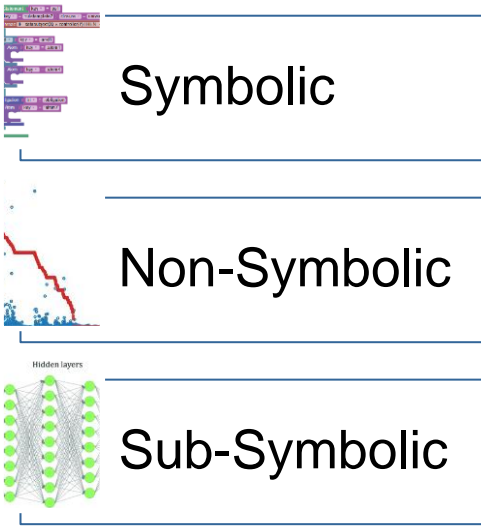
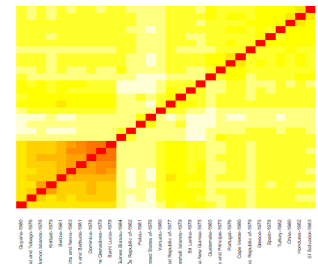
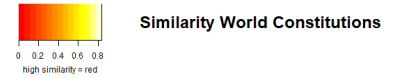
Semantic Web and Knowledge representation

ML, Classification, clustering, NLP, predict

Legal data analytics

Blockchain & Smart Contract

Hybrid AI for Legal Domain



#AKN for “White box” approach in AI

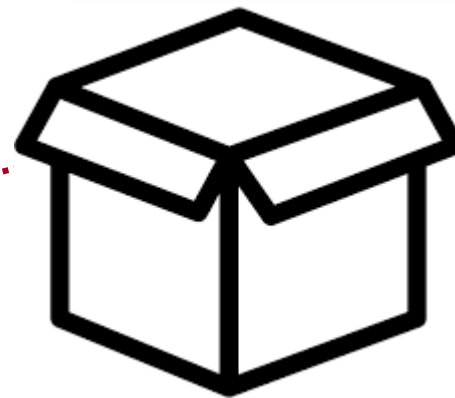


AKOMA NTOSO

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

OASIS LegalXML

LegalRuleML



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I agree to these Terms of Service

Continue

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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

Machine-readable

Human-readable



Legal XML standards in the world

- 1997 ■ EnAct - Tasmania, Australia, New Zealand e Canada
- 1999 ■ FORMEX data model - EUR-LEX
- 2001 ■ NormeinRete – Italy
- 2002 ■ MetaLex and SDU BWB - Netherland
- 2003 ■ LexDania – Denmark
- 2003 ■ eLaw - Austria
- 2004 ■ CHLexML - Swiss
- 2006 ■ **AKOMA NTOSO - United Nations for Pan-African Parliaments**
- 2008 ■ Crown XML Schema for Legislation - United Kingdom
- 2008 ■ Chile XML
- 2009 ■ House of Representatives
- 2013 ■ USML schema

2013



OASIS LegalXML



 MetaLex/CEN

Akoma Ntoso is a methodology

 UNITED NATIONS SYSTEM CEB

Chief Executives Board
for Coordination

HIGH-LEVEL COMMITTEE ON MANAGEMENT (HLCM)

 **Akoma Ntoso** for the United Nations System

Guidelines for the mark-up of UN normative, parliamentary and judicial documents

**Guidelines for the mark-up of UN
normative, parliamentary and judicial
documents**

Google Custom Search

 **AKN4UN**

Part 1

Technical Specifications V 1.0

 **AKN4UN**

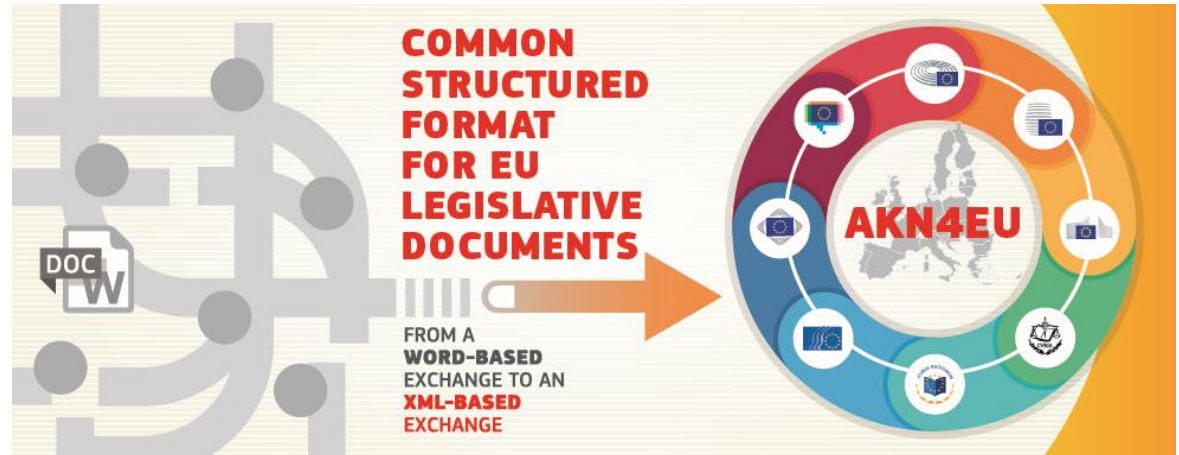
Part 2

Document Modelling V 1.0


 **AKN4UN**


Modelling of GA Resolutions

The United Nations System
Document Ontology 



Presidenza del Consiglio dei Ministri Docs Piano Triennale IA Avanzamento digitale Dati ITA

 **AGID** Agenzia per l'Italia digitale

Seguici su 

Cerca nel sito

Agenzia Piattaforme Infrastrutture Sicurezza Dati Design servizi Linee guida Progetti

Home · Agenzia · Stampa e comunicazione · Notizie ·
Pubblicata la Circolare n. 2/2019 "Adozione di standard per la
rappresentazione elettronica e l'identificazione univoca del
patrimonio informativo di natura giuridica e istituzione del Forum
Nazionale per l'informazione giuridica"

**Pubblicata la Circolare n. 2/2019
"Adozione di standard per la
rappresentazione elettronica e
l'identificazione univoca del
patrimonio informativo di natura
giuridica e istituzione del Forum
Nazionale per l'informazione
giuridica"**

 CONDIVIDI

Legal Open Data in Common Law

```
<?xml version="1.0"?>
- <akomaNtoso xmlns="http://docs.oasis-open.org/legaldocml/ns/akn/3.0/CSD13">
  - <act name="UnitedKingdomPublicGeneralAct">
    - <meta>
      - <identification source="#source">
        - <FRBRWork>
          <FRBRthis value="http://www.legislation.gov.uk/id/ukpga/1998/29"/>
          <FRBRuri value="http://www.legislation.gov.uk/id/ukpga/1998/29"/>
          <FRBRdate name="enacted" date="1998-07-16"/>
          <FRBRauthor href="http://www.legislation.gov.uk/id/legislature/UnitedKingdomParliament"/>
          <FRBRcountry value="GB-UKM"/>
```



legislation.gov.uk

Home

About Us

Browse Legislation

New Legislation

Changes to Legislation

THE OFFICIAL HOME OF REVISED
ENACTED UK LEGISLATION
1267-PRESENT
CHANGES OVER TIME

Welcome

United Kingdom

Scotland

Wales

Northern Ireland

<http://www.legislation.gov.uk/developer/formats>

Critical issues in legal domain

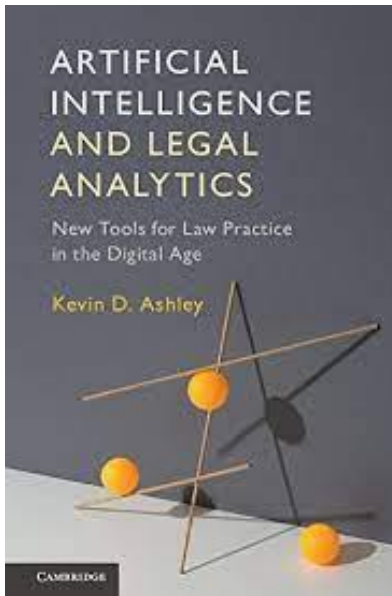
Structure: LLM works at **sentence level/document level** and this approach is not capable to understand the structure (e.g., sequence of articles)

Context: LLM loses the **context** (e.g., jurisdiction, temporal parameters)

Innovation: LLM depends to the **past data series** (e.g., new brilliant solution has no historical series)

Reference: ML does not consider the **normative and juridical citations**. The normative references evolve over time (e.g., art. 3 is not the same forever)

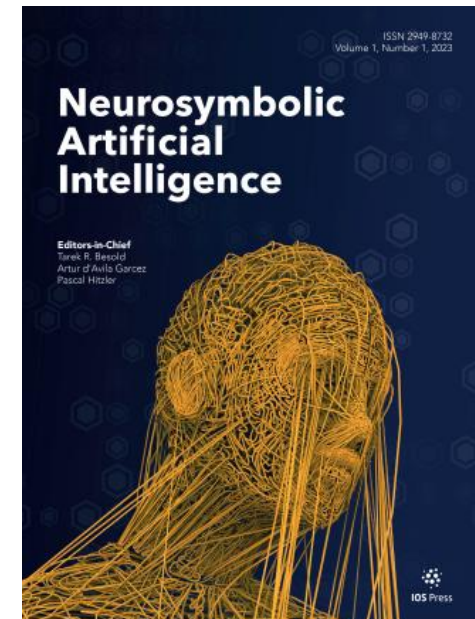
Time: the LLM is **timeless** and the legislation is integrated in the legal system



Klaus Günther

From Normative to Smart Orders?

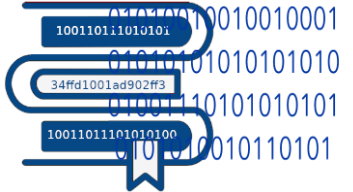
Abstract: The increasing penetration of new digital technologies, especially artificial intelligence, into almost all areas of society's life has led to the emergence of smart orders. These are orders that are designed to minimize or eliminate deviations from their norms through intelligent design and 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



HyperModeLex Research Questions

11010010101010100

11010111010010011



What is the Law in digital era?

Go beyond post-reductionism textualism / normativism of philosophy of law for a new theory of eLegislation

01

How to model interpretation?

Analyse Legal Hermeneutic in eLegislation

02

How to defend democracy?

Define Constitutional legitimacy of eLegislation and its e-enforceability

03

How to preserve legal language ?

Integrate Legal language role in normativism with computational linguistics models

04

How to keep autonomy ?

Implement *Better Regulation* with Legal Design and HCI

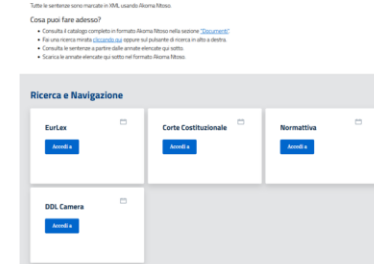
05



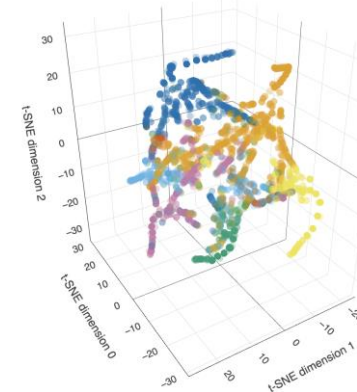
Some scenarios using Akoma Ntoso

1. Suggest the relevant definitions according to title, topic, keywords (EUROVOC)
2. Suggest the relevant normative references from an incomplete prompt (partial citation)
3. Similarity between different legal sources (PDL, Corte Costituzionale/ amendments, Regolamenti EU)
4. Use LLM for extracting the temporal modifications
5. Extraction of «obligations/mandates/exception» and formalization in AKN-XML and RDF
6. Model plain legislation in AKN-XML
7. Generate «preamble» and «definitions» using AKN

A. Ricerca avanzata



5. Naviga i documenti originali in EUR-LEX e Normativa *point-in-time*



1. Cercami le **definizioni** in EUR-LEX e in Normativa di «energy/energia» **affini** alla mia tematica

2. Cercami i **referimenti** in EUR-LEX **affini** al tema «hydrogen» usando EUROVOC

3. Cercami i **PDL simili** sul tema «energia» (secondo le classificazioni tematiche della Camera)

4. Cercami le decisioni della **Corte Costituzionale** in tema di «energia»

Comitato di vigilanza sull'attività di documentazione

Premiazione dei vincitori della Manifestazione di interesse per la raccolta di proposte per l'utilizzo dell'intelligenza artificiale generativa per la Camera dei deputati

Intervengono:
Lorenzo Fontana
Presidente della Camera dei deputati
Anna Asciani
Vicepresidente della Camera dei deputati

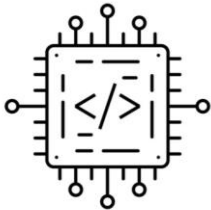
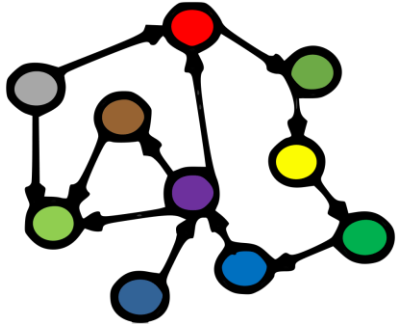
25 luglio 2024, ore 11.30
Sala della Regina

SEGUI LA DIRETTA:
WEBTV.CAMERA.IT

Per accrediti: sg_ufficiostampa@camera.it

AKN+RAG+Ontology+KG

FRAMENET



Embedding



KG4AKN

FrameNet:

RAG
(LLM and Symbolic AI)

Explicabiliy using
QA

Filtered results

Improvement of the prompt

RAP – LLM #2

LLM #1
Query generation
SPARQL

Prompt:
Topic: Give me relevant
legislation about pesticide
Tempo: nel 2023
Giurisdizione: no Malta

Prompt:
Topic: Give me relevant
legislatoin about pesticide
Tempo: nel 2024
Giurisdizione: no Malta, no
Cipro

LLM#3



**Kindly thank you
for your attention**

Monica Palmirani - monica.palmirani@unibo.it