

Principles of law: approaching a functional extraction

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NEXT GENERATION UPP

New collaborative schemes between universities and judicial offices to improve the efficiency and performance of justice in North-West Italy

*Jointly with the Italian Ministry of Justice
General Directorate for the coordination of cohesion policies*

ACTION 1.3

Definition of the activity catalog to strengthen the Office for Trial (namely Ufficio per il Processo – UPP)



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A decorative graphic on the right side of the slide, consisting of a complex network of blue and white lines that resemble a circuit board or a neural network. The lines are vertical and horizontal, with many small dots at the intersections, creating a dense, intricate pattern that extends from the top to the bottom of the slide.

➤ **BACKGROUND**

Legal Perspective

Computer Science Perspective

➤ **SOME FIRST EXPERIMENTS AND RESULTS**

➤ **CONCLUSIONS AND FUTURE WORKS**

BACKGROUND I – Legal Perspective

- ❖ In the Italian legal system, there is **no codification** of the binding nature **of the precedent** as such.
- ❖ Nevertheless, it undeniably constitutes **a trend value** within the system, in force of which one should not deviate from a **consolidated interpretation of the jurisprudence** (e.g. of the Supreme Court of Cassation), **without strong and appreciable reasons**.
- ❖ That is because the use of precedents allows:

LEGAL CERTAINTY

EQUAL TREATMENT OF SIMILAR CASES

EXPECTATION ABOUT FUTURE DECISIONS, above all in lawless cases

Why principles of law?

- ❖ Principles of law are the **beating heart** of a precedent.
- ❖ They represent **the generalization of the interpretation and application of the rule to a concrete case.**
- ❖ Through their formulation, the individual decision is brought under a general rule intended **to be applied not only to same cases, but also to similar or comparable ones.**
- ❖ Not by chance, in the decisions motivation **the recall of the compliant precedents is requested** (Article 118 of the implementing provisions of the Italian code of civil procedure).

In other words...

The formulation of principles of law, translated into an hermeneutic directive, has the function of **universalizing individual decisions**.

Why automatic extraction?

- ❖ A higher specificity, in carrying over the principle of law, increases the **possibility of giving life to a chain of subsequent application** of it to an indefinite series of cases and situations.
- ❖ It crosses the need for precision, aimed at not stopping the application chain, together with a **reduction in research times** and in identifying the principle of law suited to the case at hand.
- ❖ In fact, this is a data to be reached in the shortest possible time, since the principles of law, condensed in precedents, **affect judgments motivation** and so the **timing of the decision-making phase of trials**.

BACKGROUND II – Computer Science Perspective

The collection of the metadata represented by principles of law can:

- ❖ **Give a metric of comparison**, with a semantic connotation, that can provide aid both to tasks such as classification or similarity on different legal corpora.
- ❖ **Add a new dimension to this newly found metric.**
- ❖ **Be of interest** as to model with more in depth the real world scenario represented by each judgment .

First Experiments - Regex Extraction

Given the absence of previous approaches to principles of law extraction, our first attempt to “how to recognize principles of law” automatically has been pattern driven using **Regular Expressions**, as our first naive tool.

It behaves better with
predictable, easily
describable, patterns.

```
#The most poignant of the five regex used in our experiments.

Jptype1= "[Cc]?(?:ass\.|assazione|orte[Cc]ost|Sez|Suprema) .
{0,20}\n?.{1,20}\d+(?:[\\/.n,:e\s\w\-\;°]+\d+)+"
Jptype2= "Corte.*sentenza n\.( \d{4}\\/\d{2})"
Jptype3= "[\"]{1}[ a-zA-Z0-9?><;,\.\{ }\[\] \_+=!@#\$%\^&*|'ÀÈÌÒÙ
àèìòù]+[\" ]{1} *[\(\){1}[ a-zA-Z0-9?><;,\.\{ }\[\]
\_+=!@#\$%\^&*|'\./ÀÈÌÒÙàèìòù ]*[Cass\.] {4}
[a-zA-Z0-9?><;,\.\{ }\[\] \_+=!@#\$ %\^&*|'\./ÀÈÌÒÙàèìòù]+
[\)]{1}"
```


Annotations

3 different sets of data, all regarding the **same judgments** but annotated – by the two jurists of our team - with a **different methodology**, hereafter explained in detail.

Datasets (coming from Turin Cort of First Instance, Labour Section)

- ❖ **First Annotation:** general detection of principles of law.

Two main types:

- the *implicit* ones, identified as such by the regulatory authorities;
- the *explicit* ones, correlated to citations of rulings.

- ❖ **Second Annotation:** focused on the explicit citations.

(i.e. *cfr. Cass. n. 32500 del 2018 cit.*)

- ❖ **Citation set:** similar to the previous one.

Plus noise and redundancy reduction & focus on identification numbers.

Results

dataset	retrieved relevant		intersection threshold		precision	recall	f1score
first set	7	22	6	10%	0.857	0.272	0.413
second set	7	14	5	10%	0.714	0.357	0.476
citations set	7	10	6	50%	0.857	0.6	0.705

It can be observed that Supreme Court related **explicit citations** (in second set and third set) can be captured by regex pattern **matching with better results**, than the implicit ones.

There has been a noticeable improvement as compared to the citations set one. Hence our focus on explicit citations of principles of law, **easier to detect and even more meaningful in semantics.**

Conclusions & Future Works

During this interdisciplinary work with experts in different domains, emerged the great importance of tracking the semantic meaning and use of Supreme Court citations over time. In this sense, the **changing of the principles of law over time** may be valued, perhaps as **a way to possibly support jurisprudential prediction** (especially for the lawless cases), which in the Italian legal panorama often concern **personal rights**.

Furthermore this work may be used as foundations for other Natural Language Processing tasks like **classification or similarity**, as well as a baseline for this **specific information extraction task**. The next experiments regarding this information extraction task shall focus on the **Supreme Court of Cassation quotes** which in our experiments proved to be **the most stable patterns to be recognized**.

Thank you for your attention!



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