

AI to Facilitate Legal Analysis in the PESTLE Context

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Context: PESTLE

- ▶ PESTLE is a framework used to analyse uncontrollable external environmental factors
- ▶ It has been used for decades to help companies in taking challenging and complex decisions
- ▶ The model is particularly utilised when business are developing new products, or are expanding in new countries or new markets.
- ▶ Managers and Marketers can conceptualise different scenarios, and develop potential alternatives.



The
different
elements of the
PESTLE
Analysis

Example: opening
new stores in a
country

How is PESTLE currently used?

- ▶ **manually**: human experts have to collect relevant information and analyse them
- ▶ This makes particularly cumbersome to deal with Legal aspects:
 - ▶ health and safety;
 - ▶ advertisements policies;
 - ▶ price transparency;
 - ▶ Patents & copyright;
 - ▶ working conditions



Importance of legal aspects

- ▶ By being able to effectively investigate and identify all the regulations necessary for their businesses, companies can:
 - ▶ Have a better understanding of the context
 - ▶ Avoid paying fines and penalties.
- ▶ Examples include GlaxoSmithKline forced to pay \$3 billion for misbranding, and Google breaching Europe's data privacy laws (GDPR)



Idea: AI for PESTLE

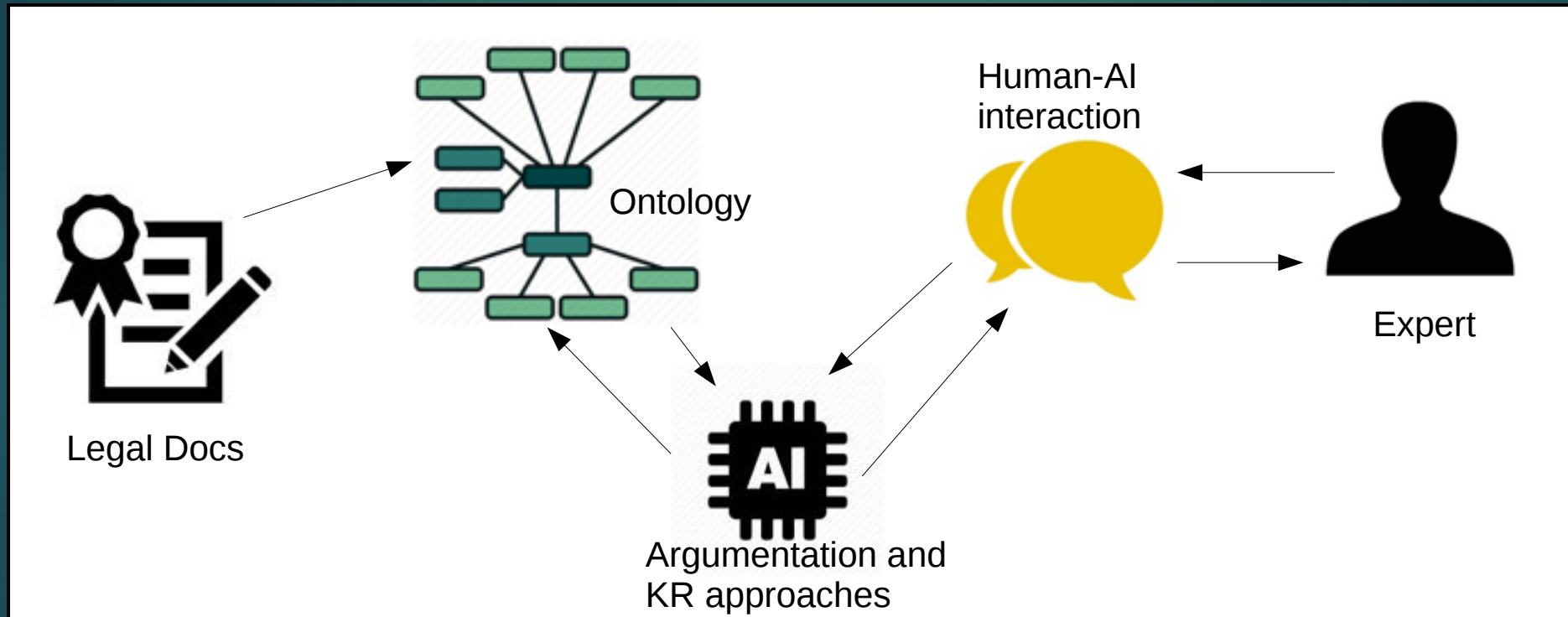
- ▶ We envisage a framework for exploiting emerging AI techniques for supporting the analysis of the Legal aspects of the model.
- ▶ Recent developments in AI, particularly KR&R, suggest that a large part of the Legal part of the PESTLE analysis can be supported by AI-based agents.



Emergent AI Technologies

- ▶ AI applications to legal domain are gaining importance
 - ▶ Dedicates venues (conferences, journals)
 - ▶ EU projects (MIREL)
- ▶ Use of ontologies to represent information, and automated reasoning (e.g., argumentation) to deal with the queries
- ▶ Human in the loop, and not on the loop.

Proposed Framework



Main barriers to direct application

- ▶ Large body of regulations and laws not electronically stored
- ▶ Some degree of freedom (interpretation)
- ▶ Complexity of retrieving information and reasoning on large amount of data
 - ▶ Very hard to reason with more than few docs
- ▶ Representation of the Knowledge

Can we use ML?

- ▶ Mostly: no.
 - ▶ How to train?
 - ▶ Importance of explainability and transparency
 - ▶ Allowing the user to change query and investigate alternative options

Evaluation

- ▶ This is an open research question, and we are actively working on developing the framework and identifying suitable testing scenarios
- ▶ **We had some qualitative discussions with PESTLE and marketing experts**
 - ▶ Very well receipt: excitement of companies and experts

Conclusions and future work

- ▶ Focus on legal aspect of the PESTLE analysis
- ▶ We introduced a framework for exploiting AI to support companies
- ▶ Future work:
 - ▶ Developing a prototype
 - ▶ Collaborate with companies and experts for scenario and HCI
 - ▶ Gather real data
 - ▶ Check if the framework can be extended to handle other PESTLE factors

Thank you!

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