Faculty of Mathematics and Information Science
WARSAW UNIVERSITY OF TECHNOLOGY

Research Support System for Political Sciences

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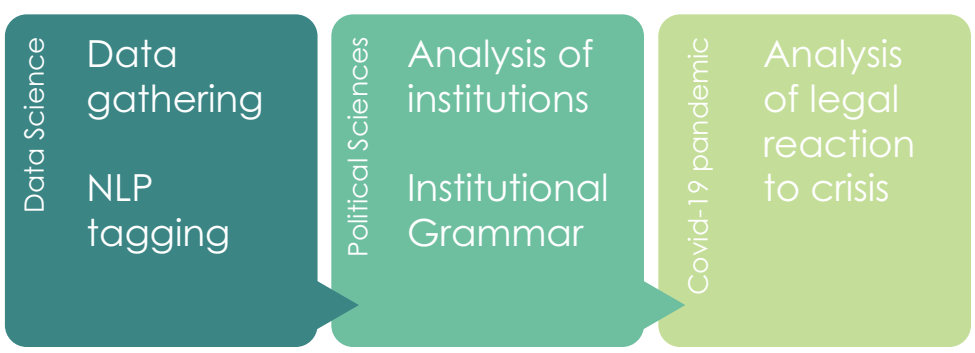
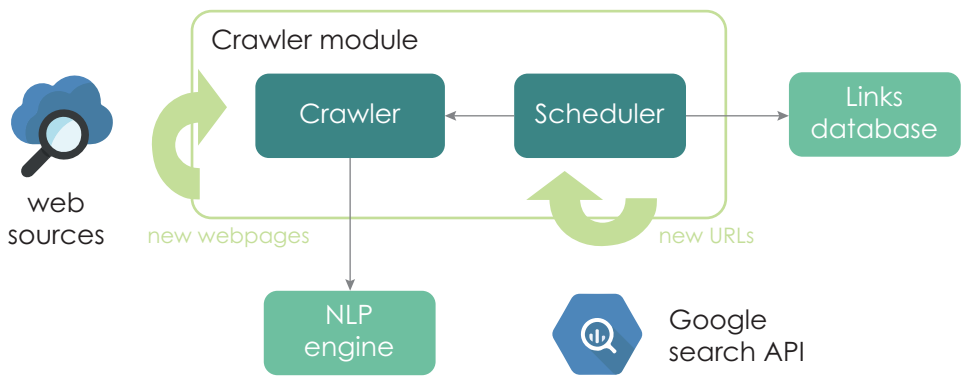
Background

In our work, we provide expertise on research facilitation in political science as a case study based on the COVID-19 pandemic in 2020, which aims to analyze the COVID-19 pandemic's legislative documents all over the world using the Institutional Grammar [1] – text annotation layer.



Dataset building

We collected data by web crawling of government websites to search for legal act documents about the pandemic and evaluate this process and gathered data - over 100,000 PDF documents.



Natural language processing

We developed an annotation tool for the Institutional Grammar to support annotators.

AIM - action performed in legal act

DEONTIC - whether the action is prohibited/recommended

ATTRIBUTE - actor which performs the action

OBJECT - object/person which the action concerns
- Object Direct
- Object Indirect

CONTEXT - context of performed action
- Activation Condition
- Execution Constraint

The main components of one of the layers - IG Core Regulative - are presented in the figure above.

Upon accreditation certifier must monitor farmers every month.

CONTEXT | ATTRIBUTE | DEONTIC | AIM | OBJECT DIRECT | CONTEXT

Certifier registers certification for organic farmer.

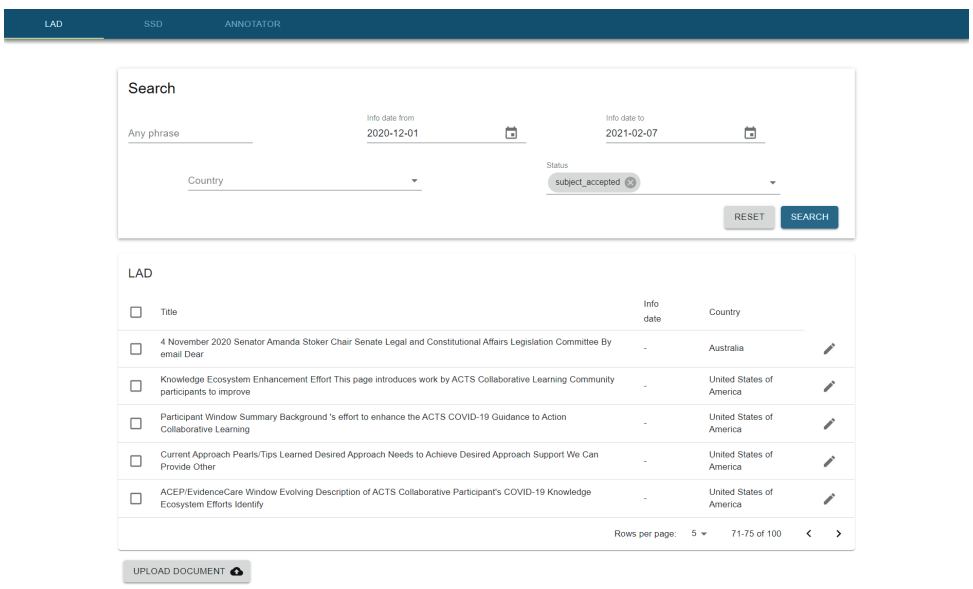
ATTRIBUTE | AIM | OBJECT DIRECT | OBJECT INDIRECT

Above, we present some examples of regulative sentences annotated with IG 2.0.

Institutional Grammar (IG) is a method of annotating the legal acts created by Sue Crawford and Elinor Ostrom [2]. Annotating legal acts following the Institutional Grammar allows political scientists to analyze these documents' contents in a more quantitative view. It also allows for finding dependencies between the activities of various entities and institutions. To support the annotation process conducted by scientists, we created a Python package policydemic-annotator, which can be used to lower the labor-intensity and at least preannotate the documents.

Web application

We integrated these tools and data into the web application infrastructure for use by domain experts.



Searching for documents by specified parameters

Viewing and editing the document

Comparing multiple documents

Adding new documents

Ordering translation and annotation of documents

Downloading files with annotations

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https://github.com/k-sap/policydemic

[1] Christopher K. Frantz and Saba N. Siddiki. Institutional Grammar 2.0 Codebook, 2020
[2] Sue E. S. Crawford and Ostrom, E. A Grammar of Institutions. The American Political Science Review, 89(3), 582-600., 1995