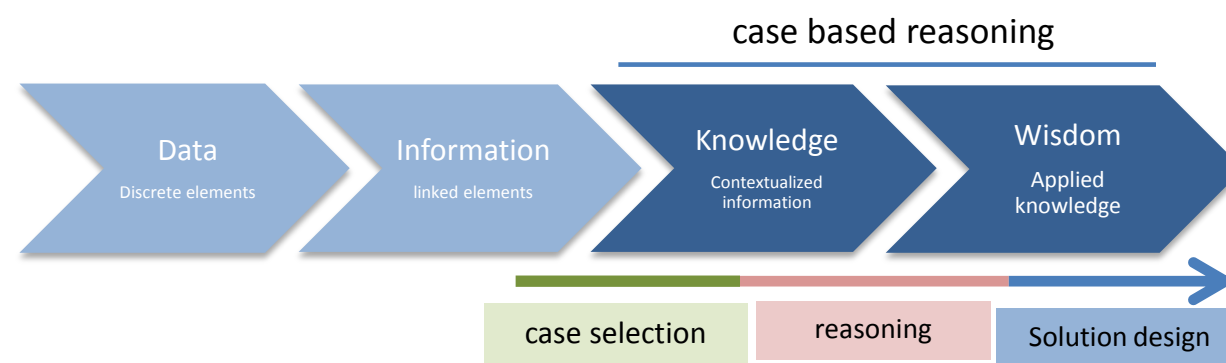


Learning Knowledge Search Techniques in the Law and other Domains

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INTRODUCTION



Case selection =

Search previously decided cases

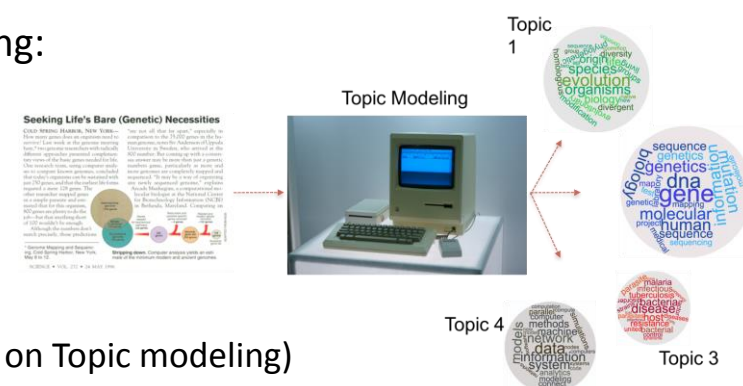
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Identification of the most similar cases

The search results are used by humans and automated systems for problem solving. Traditional knowledge engineering replicates this step through expert knowledge elicitation. It relies on the human's capability to find previously decided cases (information) and to apply that knowledge to solve future problems. The process is complex and time-consuming.

APPROACH (RESEARCH METHODS)

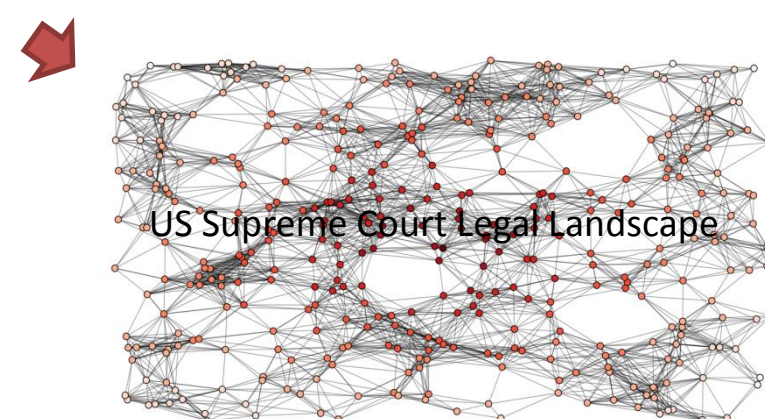
1. Legal documents Modeling:



2. Similarity network (based on Topic modeling)

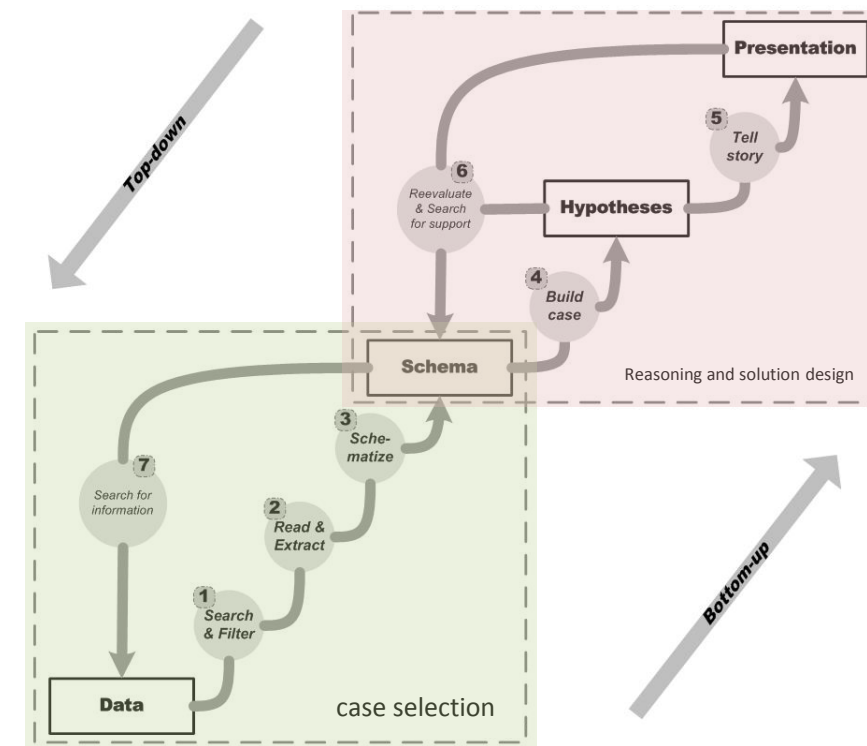
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Citation networks



3. Reinforcement learning

MOTIVATION



Motivation: New computational technologies are able to replicate this process, simplify it and improve it.

NEED & INDUSTRIAL RELEVANCE (case: Computational Law)



- Legal research costs billions of dollars each year.
- Legal research takes time away from problem solving and solution development.
- Informational barriers limit access to justice.

Retail / Main Street

Size of Market \$75 billion
(with huge potential upside)

Number of Potential Clients 318 million

statistics via Bill Henderson

Enterprise Law

Size of Market \$150 billion
Number of Potential Clients 40,000

statistics via Bill Henderson

DELIVERABLES/OUTCOMES

- Deliverables for Year 1:

1. Literature review
2. Mathematical models and algorithms
3. Topic modeling and reinforcement learning code

- Deliverables for Year 2:

1. Integrated solution for textual search
2. Technical reports including
 - a. explanation of theory,
 - b. modeling,
 - c. algorithm,
 - d. data acquisition and testing results

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Goals

- To increase case search results quality
- To accelerate case search process and reduce time consumption significantly
- To change (legal) search procedure to be more efficient and reliable
- To develop an framework which can learn the search behavior of experts and replicates that



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