

Research Assessment#7

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Subject: Data Analysis and Artificial Intelligence

Source:

Rahmani AM, Azhir E, Ali S, Mohammadi M, Ahmed OH, Yassin Ghafour M, Hasan Ahmed S, Hosseinzadeh M. Artificial intelligence approaches and mechanisms for big data analytics: a systematic study. *PeerJ Comput Sci.* 2021 Apr 14;7:e488. doi: 10.7717/peerj-cs.488. PMID: 33954253; PMCID: PMC8053021.

Assessment:

Recently I got into contact with a Director of Regulatory Affairs at UnitedHealth and interviewed him. During our interview we discussed collaborating to combine AI to analyze data, primarily searching things that need to be reviewed in large legal data sets versus what does not. He has already built some form of programming to sort his own files, but could be far more efficient. Thus the source I have chosen discusses four main groups of artificial intelligence that are useful for data analysis: Machine Learning, Knowledge-Based and Reasoning Methods, Decision-Making Algorithms, and Search Methods and Optimization Theory.

The article's coverage of Search Methods and Optimization Theory has changed my understanding of techniques that can be employed to analyze large legal datasets. In the context of legal data analysis, where vast volumes of information need to be sorted, classified, and extracted for insights, an efficient program is vital to save processing time. Search methods encompass various algorithms and strategies for efficiently exploring extensive data repositories and retrieving relevant information. Optimization theory, on the other hand, offers a framework to enhance decision-making and resource allocation in complex legal datasets. Optimization theory is exactly what it sounds like, it's the process of optimizing your product based on its specific needs, in this case programming to limit factors like resource allocation (Memory). As a legal professional, this knowledge is instrumental in improving the efficiency and precision of legal research, enabling UnitedHealth to more effectively identify critical information, patterns, and trends within extensive legal documents and databases. The acquired insights from the article's discussion on these methods will inform my approach to data analysis, ultimately enhancing the quality of my final product.

Additionally, another powerful data analysis method I found in the article that I intend to use for handling large datasets is Natural Language Processing (NLP). NLP encompasses a range of techniques that enable the computer to understand, interpret, and generate human language. In the context of legal data

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analysis, NLP can be used to extract key concepts, relationships, and sentiments within the documents. This technology facilitates the automated summarization of legal cases, enabling quick access to information. It also helps in entity recognition, such as identifying names of individuals, organizations, and legal terminology, which is essential for legal categorization and citation analysis. This is where I understand the process most, as for example when searching through emails you would filter out certain key names to remove the wasteful spam, in this way using NLP you can have the program only display pertinent data to users saving countless time. Sentiment analysis in legal texts can aid in identifying the emotional tone and context of legal documents, providing a deeper understanding of the implications of legal cases. By leveraging NLP techniques, I aim to enhance the efficiency of data analysis by automating tasks such as legal document summarization on top of sorting. Overall in some form of business I would like to accelerate the process of decision-making.

Though I do not have a mentor yet, opportunities to work on a final project that can be used by some very important people in very important companies becomes a real possibility. Until then I will focus my research on understanding ways to create different kinds of artificial intelligence. Each method, technique, and theory will go into my final project design and hopefully by the end of the year I have created a program that makes life easier.

[Annotations](#)