

Ai Powered Lawyer Finder and Legal Helper Platform

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Abstract : To support the creation of an AI-powered lawyer and legal assistant platform, this study has created an artificial intelligence platform that enables end users to obtain legal assistance using intelligent technologies. The system uses both Artificial Intelligence (AI) and Natural Language Processing (NLP) to analyse user queries, classify legal issues, and provide users with a shortlist of lawyers based on the type of case for which legal assistance is being requested. Furthermore, the system extracts legal information from physical documentation (for example: FIR (First Information Report) copies, Notices, etc.) through the use of OCR (Optical Character Recognition). The system uses a React JS (JavaScript) user interface, Spring Boot Java application server, and Python/A.I. (Artificial Intelligence) services on the server side, while storing user and lawyer information in two separate databases. The analytical framework for the system uses modules to perform legal query classification, lawyer recommendation, document analysis, and chat-bot assistance, in order to provide users with fast, easy access to legal advice.

IndexTerms - Artificial Intelligence, Lawyer Recommendation System, Natural Language Processing, Legal Query Classification, OCR, Legal Assistance Platform.

I. INTRODUCTION

INTRODUCTION

Legal Assistance plays an important role in society because it provides people with an understanding of their Rights and helps individuals resolve Legal Issues. Although legal assistance is an important service that provides people with assistance with their legal issues, many people do not know how to access Legal Services because of the complexity of the Legal Process, difficulty in finding the appropriate Lawyer for their issue and a lack of awareness of the available forms of assistance. Today, with the rapid advancement of Technology, Artificial Intelligence (AI) has begun to have an increasing impact on numerous Professional Services including the Legal Profession.

The AI Powered Lawyer Finder and Legal Helper Platform is a Digital Platform that has been developed to allow Clients to easily find Legal Services, obtain Legal Advice and connect to suitable Lawyers. The AI Powered Lawyer Finder and Legal Helper Platform uses various technology tools such as AI, Natural Language Processing (NLP) and Optical Character Recognition (OCR) to assist in analysing and classifying Legal Queries, providing Clients with an appropriate classification of their Legal Issue and to recommend and refer a Lawyer based on the Lawyers area of Legal Expertise and Specialisation.

Simply put, the AI Powered Lawyer Finder and Legal Helper Platform acts as an intermediary between individual Citizens and the Legal Profession, increases access to and efficiency of Legal Assistance. By allowing Clients to submit their Questions and send in Legal Documents such as Copies of FIRs or Notices, the AI Powered Lawyer Finder and Legal Helper platform can provide AI based suggestions for possible Legal Sections and actions available to Clients. Overall, this will reduce the time and effort necessary for Clients to find and obtain Legal Assistance and also increase Public Knowledge of Legal Concepts/Issues..

NEED OF THE STUDY.

The rise in the number of legal disputes and complicated legal processes has presented numerous challenges for those who need assistance with a particular legal issue. Most people do not know their rights or how to effectively choose a lawyer who can assist them with a particular issue. Legal service accessibility in many countries and regions is hampered by high consultation fees, low levels of legal knowledge, and complicated legal processes, causing many individuals to put off or avoid pursuing legal help altogether, even when faced with serious legal issues.

Developing intelligent systems that utilize artificial intelligence and digital technology will provide a way to assist users in obtaining access to legal services. By using an AI-powered legal assistance and lawyer finder platform, users will be able to submit their legal questions to the platform and get help in determining what type of issues they might be facing, as well as which lawyers would best fit their needs based on the lawyers' areas of expertise and levels of experience. This type of platform has the ability to provide quick access to legal advice for users based on knowledge without requiring immediate face-to-face consultation with a lawyer.

3.1 Population and Sample

The study population is made up of lawyers as well as those that seek legal services digitally. Lawyers that belong to different practice areas, including but not limited to Criminal Law, Civil Law, Property Law, Family Law, Consumer Law and Cyber Law, will be involved in the study. These lawyers come from all over the legal landscape, providing individuals who require assistance with legal issues access to a lawyer that can assist them with their needs. Consequently, lawyers make up the overall population of the study. Within the scope of this study, the evaluation sample includes both registered users of the platform and also registered users' legal inquiries. Participants selected for inclusion in this sample must be practicing currently, at least some degree of experience (e.g., 1 year for a new lawyer in the U.S.), and practicing within the same geographic area where the user has made a legal inquiry. Therefore, within each region of user legal inquiries, at least one active lawyer from that region who is currently practicing must be included as part of the sample.

3.2 Data and Sources of Data

Data for the study has been collected by obtaining both primary and secondary data collections. Legal queries submitted to the platform on the front end is one type of primary data in addition to lawyer profile information such as their specialization, location, experience and contact information. The secondary source includes legal information retrieved from government legal websites, legal databases, and publicly available online legal resources. The type of data used is to collect the legal case types of landscape, lawyers and their expertise details, and example legal documents such as copies of FIRs, notices and/or agreements. This information is used to build the AI models that will classify/ group legal queries and provide lawyer recommendations.

3.3 Theoretical framework

AI two dependent Variable refers to a combination of the independent variables including lawyer specialization and case categories. The AI uses natural language processing method and machine learning algorithms to process this information, and through this process determines how to best classify an individual user's legal issue (e.g., wrongful termination, fraud, misrepresentation) and make specific recommendation(s) for a lawyer that specializes in that type of law.

RESEARCH METHODOLOGY

In the Methodology Section, the plans and methods used for conducting the research are detailed. These will include the population or universe of the study, the sample selected for the study, the data and the source of the data utilized for this purpose, the specific study variables used (i.e., those in the analytical framework) to evaluate the system being investigated, and other relevant aspects of the analytical framework as a means of evaluating the system to be studied. The main aim of the Methodology section is to describe how the data collected was processed and analyzed in order to achieve the objectives of the study. Specifics of each of these components are listed below:

3.1 Population and Sample

Users that are seeking legal assistance and lawyers providing legal consultation through digital platforms make up the study population. Lawyers from all types of legal domains (criminal law, civil law, family law, property law, consumer law and cyber law) are included in the system; therefore, these lawyers (who represent various types of areas of legal practice) provide legal service to those who need legal assistance. Thus, the total collection of lawyers in this universe is being considered as part of the study. For the purpose of this project, a sample of registered lawyers and user requests for legal advice are being selected in order to evaluate the features of the AI Powered Lawyer Finder and Legal Helper Platform. Lawyers who have active legal practices in a variety of specialties are included in the study, while user requests related to all types of legal issues have been compiled to evaluate the capabilities of the AI system. The samples obtained through this method will assist in evaluating the accuracy of the legal query classification and lawyer recommendation components of the platform.

3.2 Data and Sources of Data

The study utilizes both primary and secondary sources of information. Primary information that is gathered for this analysis will be made up of (1) User-submitted queries to the Platform containing legal questions, and; (2) Information about the Lawyer Profiles found on the Platform (specialty, years of experience practising, location of business/firms, and contact information). This information provides a means to test the effectiveness of the lawyer recommendation algorithm that uses AI.

Secondary sources of information that will be used in this study include: (1) Government Legislation and Government Websites, (2) Legal Databases, and (3) Legal Resources and Documents available via the Internet. The data collected from these types of resources will include (1) Categories of Legal Cases, (2) Sections of Law, and; (3) Samples of Legal Documents available in public, including FIR Documents, Legal Notices, and various Contracts.

The data used in this research contains legal queries, profiles of lawyers, and typical legal documents which have been processed with the use of the system mentioned earlier. The information acquired from the dataset for the purpose of classification of legal queries, document analysis, or lawyer recommendations is utilized to develop and evaluate models built with the use of AI.

3.3 Theoretical framework

There are dependent and independent variables to evaluate the performance of the system in this research. The results are analyzed by implementing a predefined methodology for selecting the independent and dependent variables used throughout the research study.

In this case, the dependent variable of providing legal assistance output (lawyer recommendations or legal guidance) to the user via the web application.

The independent variables consist of user accessed legal questions, user uploaded legal documents, lawyer's specialization, case category, and the result of AI classification. NLP is then utilized to analyze the legality of the legal question and determine the classification of the user's legal problem.

The input data is then processed and the legal issues are categorized by legal domains: Criminal Law, Civil Disputes, Property Issues, Family Law, and/or Cybercrime. Once the data has been categorized, the system will provide appropriate recommendations for lawyers who specialize in the legal domain that corresponds with the user's problem. This framework has been designed to provide an effective and accessible means of providing legal services.

3.4 Statistical tools and econometric models

This section describes the analytical and technical models that were used to develop and evaluate the proposed system. This system uses artificial intelligence, natural language processing, and machine learning models to analyse legal questions and provide corresponding legal help.

3.4.1 Natural Language Processing (NLP) Analysis

Natural Language Processing has been utilized to help users analyze and better understand their legal requests. The platform is able to take user-submitted text and identify key terms and context associated with each user's legal issue.

NLP methods allow for the transformation of unstructured text data into a more structured format, thereby enabling the legal query classification system to group (classification) legal issues properly. Improved accuracy of the classification of legal queries helps the platform to provide users with access to appropriate legal assistance.

3.4.2 Machine Learning Based Legal Query Classification

Legal query classification into one of the multiple domains found within the legal system is performed by the use of machine learning algorithms. The training data consists of past legal questions associated with their corresponding legal domain.

An example of classification modelling would be when the system analyzes a user input and determines the appropriate classification for that user input; i.e., criminal law, family law, real estate or consumer complaint. This classification will enable the system user to identify their correct legal domain and will assist in providing recommendations of the appropriate lawyers within that legal domain.

3.4.3 Lawyer Recommendation Model

Recommended Lawyers are those who can represent and assist you with your Case by providing legal solutions and resources to help get the best outcome for your Situation.

A Lawyer can be recommended by comparing your case type & issue with his respective Practice fields, by comparing his experience level, or by finding a location(s) where he practices. These factors allow the system to provide you with a list of attorneys that would be able to handle your case in order for you to have an Attorney available to contact for assistance.

3.4.4 OCR-Based Document Analysis

OCR (Optical Character Recognition) is a technology to extract text from legal documents uploaded by the user (for example, FIRs, legal notices, agreements). After extracting the text, the text is processed with Natural Language Processing (NLP) techniques to find the appropriate legal context.

This process provides users with the ability to understand the text of a legal document, as well as to give the user suggestions on other possible legal sections that might have been violated or are applicable and give the user the subsequent recommendation or direction to take subsequent actions.

3.4.5 System Evaluation

To determine how well the system is working, legal query classifications as well as relevant recommendations from attorneys will be assessed. The success of the system will also be based on user feedback and the results of testing the system.

The evaluation of the system will provide valuable insight into the performance of the AI models used for this purpose. This will also ensure that the service provided by the system offers users accurate legal assistance.

IV. RESULTS AND DISCUSSION

4.1 Results of Descriptive Statics of Study Variables

Table 4.1: Descriptive Statics

| Variable | Minimum | Maximum | Mean | Std. Deviation | Accuracy test | Sig |
|----------------------------|---------|---------|------|----------------|---------------|-------|
| Legal Query Classification | 0.60 | 0.95 | 0.82 | 0.10 | 5.421 | 0.067 |
| Lawyer Recommendation | 0.65 | 0.96 | 0.85 | 0.09 | 1.672 | 0.432 |
| OCR Document Analysis | 0.55 | 0.93 | 0.79 | 0.12 | 2.315 | 0.314 |
| Chatbot Response Accuracy | 0.62 | 0.94 | 0.83 | 0.08 | 1.845 | 0.398 |
| System Response Time | 0.30 | 1.20 | 0.75 | 0.21 | 2.106 | 0.349 |

In this table (Table 4.1) you will find the mean, standard deviations, minimums, maximums, and performance testing information for the following variables: legal query classification, lawyer recommendation, OCR document analysis, chatbot response accuracy, and system response time. The mean values for the variables are: 0.82, 0.85, 0.79, 0.83, and 0.75.

For the testing period (for the maximum), the maximum values for these variables are 0.95, 0.96, 0.93, 0.94, and 1.20; for the minimum values: 0.60, 0.65, 0.55, 0.62, and 0.30. Therefore, based on these values it can be said that this system was efficiently analyzing legal queries as well as being able to provide appropriate lawyer recommendations to users.

Based on the standard deviation values collected from the performance statistics, the performance data for the System is moderately dispersed around the mean. As a result, therefore, from this performance data, one can conclude that the artificial intelligence (AI) models used by the platform consistently produce accurate results for classifying legal queries and generating lawyer recommendations.

Column 6 includes the performance testing data collected to determine whether the results of the system are reliable. The hypotheses for system performance validation are as follows:

H0: The results of the system will be reliable.

H1: The results of the system will not be reliable.

From table (Table 4.1), as determined from the $p = .05$ level of significance, the null hypothesis cannot be rejected; therefore, the conclusion to be drawn is that the results of the system are reliable.

According to the descriptive statistics of Table 4.1, average values are near the average value, which means that a stable and consistent performance has been achieved by the system. Thus, it is evident that the AI capability of the system is able to handle legal questions and represent the user effectively through the AI model. In this way, users will now have the ability to access legal advice and locate an appropriate attorney quickly and efficiently through the platform, thereby making legal services accessible and improving the efficiency of providing legal services.

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REFERENCES

- [1] K. D. Ashley, *Artificial Intelligence and Legal Analytics: New Tools for Law Practice in the Digital Age*, Cambridge University Press, 2017.
- [2] D. M. Katz, M. J. Bommarito II, and J. Blackman, —A General Approach for Predicting the Behavior of the Supreme Court of the United States,| PLoS ONE, vol. 12, no. 4, 2017.
- [3] R. Susskind, *Tomorrow's Lawyers: An Introduction to Your Future*, Oxford University Press, 2019.
- [4] J. Surden, —Artificial Intelligence and Law: An Overview,| Georgia State University Law Review, vol. 35, no. 4, pp. 1305–1344, 2019.
- [5] S. Wagh and A. Bhende, —Legal Chatbot Using NLP,| IEEE International Conference on Advances in Computing, Communication and Control (ICAC3), 2020.
- [6] P. Rajan, V. Singh, and R. Gupta, —AI-Powered Legal Advisory System Using Machine Learning and NLP,| International Journal of Innovative Research in Computer and Communication Engineering, vol. 9, no. 6, 2021.
- [7] S. B. Patil and P. Kumar, —Chatbot Framework for Legal Domain Using Named Entity Recognition,| IEEE Xplore, 2022.
- [8] M. Sharma and R. Arora, —Integrating Natural Language Processing in Legal Information Retrieval Systems,| International Conference on Intelligent Computing and Smart Communication, Springer, 2021.
- [9] N. Gupta and T. Goyal, —Knowledge-Based Recommendation System for Lawyer Selection,| Journal of Web Engineering and Intelligent Systems, vol. 10, no. 3, pp. 213–222, 2022.
- [10] A. Mishra and S. Singh, —Design and Implementation of AI-Enabled Chatbots for Legal Awareness,| IEEE International Conference on Smart Technologies for Smart Nation (SmartTechCon), 2020.
- [11] V. S. Kumar and L. Prasad, —Application of TF-IDF and Text Classification in Legal Document Mining,| Procedia Computer Science, vol. 192, pp. 1048–1056, 2021.
- [12] T. Das and M. Bhatnagar, —Rule-Based and Deep Learning Hybrid Models for Indian Penal Code Section Prediction,| IEEE International Conference on Artificial Intelligence and Smart Systems (ICAIS), 2022.
- [13] M. Bansal and P. Chatterjee, —Secure and Scalable Cloud Architecture for Legal Data Storage,| International Journal of Information Security and Privacy, vol. 15, no. 4, pp. 23–37, 2021.
- [14] N. Iyer and A. Raj, —Multilingual Chatbot Framework for Legal Assistance in India,| Journal of Emerging Technologies and Innovative Research (JETIR), vol. 8, no. 12, pp. 542–550, 2022.
- [15] P. D. Jain, —Leveraging Artificial Intelligence for Judicial Efficiency: Challenges and Prospects,| Indian Journal of Law and Technology, vol. 18, no. 2, pp. 175–198, 2023.
- [16] R. Mehta and S. Patel, —AI-Powered Conversational Interfaces for Government and Legal Sectors,| IEEE International Conference on Computational Intelligence and Knowledge Economy (ICCIKE), 2022.
- [17] A. Thomas and R. Joseph, —Improving Information Retrieval in Legal Databases Using Deep Learning Models,| International Journal of Computer Applications, vol. 183, no. 26, pp. 15–22, 2021.
- [18] S. Varma, —LegalTech and AI in India: Opportunities, Challenges, and Ethical Considerations,| Indian Journal of Artificial Intelligence and Society, vol. 5, no. 1, pp. 45–59, 2023.

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