Artificial Intelligence in Relation to Legislation and Legal Informatics

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Abstract

This study outlines and examines the impact and utility of artificial intelligence (AI) with regard to legislation and legal informatics.Artificial intelligence (AI) is the capacity and potential of a machine or a computer program to think, learn, grasp and comprehend information. Legislation is the process of enacting laws by the legislature. Legal informatics is an area within information science.The American Library Association defines informatics as "the study of the structure and properties of information, as well as the application of technology to the organisation, storage, retrieval and dissemination of information." Legal informatics therefore, pertains to the application of informatics within the context of the legal environment and as such involves law-related organisations (e.g., law offices, courts, and law schools) and users of information and information technologies within these organizations. AI has the potential to revolutionise the way legal information is acquired, stored and utilised in legal institutions in a mass way lessening human intervention and facilitating speedier information handling.Artificial intelligence is employed in online dispute resolution platforms that use optimization algorithms. Artificial intelligence and law is a subfield of artificial intelligence. AI is mainly concerned with applications of AI to legal informatics problems and original research on those problems. It is also concerned with exporting tools and techniques developed in the context of legal problems to AI in general. Current applications of AI in the legal field involve the utilisation of machines to review documents, particularly when a high level of completeness and confidence in the quality of document analysis is required, such as where due diligence plays a role and in cases of litigation. The author also recommends certain suggestions to improve the quality and pace of AI research with regard to legislation and legal informatics. The dangers from and advantages of AI have to be balanced and evened out. The writer suggests that more stringent policy and implementation has to be brought about to bridge the gap between the industry and legal institutions, among other methods.

I. INTRODUCTION

Artificial Intelligence (AI) and legal informatics play a role in developing and facilitating legal practice, administration of legal institutions and can help a business develop e-legislation, e-justice, and e-governance. Relevant information can be fed to AI which then simulatesseveral scenarios helping to formulate one's legal plans.

AI has made its presence felt in all walks of life. The result has been a paradigm shift in several fields, making it necessary to reinvent their business and operating models. AI comprises many branches such as machine learning (ML) including deep learning and predictive analytics, and natural language processing (NLP), and is defined as "the science and engineering of making intelligent machines" that employ "cognitive computing", enabling computers to learn, reason, perceive, infer, communicate, and make decisions akin to humans.Unique and smart means of working can be found by lawyers by applying AI processes. AI can be applied to several problems which seem tough for lawyers to handle by way of complexity or volume of work.

II. DEFINITIONS

Artificial Intelligence

Artificial intelligence (AI) is the capacity and potential of a machine or a computer program to think, learn, grasp and comprehend information.

Legislation

Legislation is the process of enacting laws by the legislature.

Litigation Discovery

Litigation discovery is the process of obtaining evidence for a lawsuit.

Legal Informatics

The American Library Association defines informatics as "the study of the structure and properties of information, as well as the application of technology to the organisation, storage, retrieval and dissemination of information." Legal informatics therefore, pertains to the application of informatics within the context of the legal environment and as such involves law-related organisations (e.g., law offices, courts, and law schools) and users of information and information technologies within these organizations [1].In other words, it is the idea of computer science applied to law.Legal informatics is an area within information science. Legal informatics has also been defined as prediction and formulation of law by making use of mathematical logic, the quantitative analysis of legal behavior, and legal information retrievingmaking use of automated means.

Predictive Coding

It is the general name given to a class of computer-aided document-review procedures that look to automatically differentiate between litigation-discovery documents that are likely to be relevant or irrelevant. These predictive-coding technologies use AI techniques, like machine learning and knowledge representation, in aiding to automate this activity. Certain machine-learning e-discovery software are amenable to training on example documents: to teach the software to detect patterns for e-mails and other documents which may be relevant for the scope of the litigation.Rise of e-discovery made the said automated-review software necessary, as the document troves with regard to specific lawsuits started to increase by hundreds ofthousands and sometimes millions of documents, much beyond capabilities of humans.

Machine Learning

Algorithms detect patterns in huge amounts of data and make use of statistics to bring forth educated approximations, leading to automated decisions. This is known as known as machine learning. Current machine learning approaches may benefit only a limited number of legal tasks. However, AI can benefit certain relatively mechanical tasks in the legal field, such as legal research e-discovery document review, litigation predictive analysis.

III. ARTIFICIAL INTELLIGENCE AND LAW

AI and law is a subfield of artificial intelligence (AI) primarily related to applications of AI to legal informatics problems and original research with regard to those problems. It is also concerned with contribution in the other direction, viz., in exporting tools and techniques by developing the min relation to legal problems, to AI in general. For example, models of social organization based on norms have helped in the contribution to multi-agent systems; reasoning with regard to legal cases has helped in devising case-based reasoning; and the necessity to store and retrieve huge amounts of textual data has led to inventions in conceptual information retrieval and intelligent databases.

Today, a wide range of topics [2] fall under AI and law : formal models of legal reasoning, models of computation for evidential reasoning, machine learning and mining of data for e-discovery and other legal applications, models of computation for decision-making and argumentation, models of legislation which can be executed, legal reasoning in multi-agent systems, automatic extraction of

information from texts and legal databases, automated summarization and legal text classification, law bots to automate minor and repetitive legal tasks [3], conceptual or model-based retrieval of legal information, assessment of risk, pricing and timeline predictions for litigation by making use of machine learning and artificial intelligence [4].

IV. USES OF AI IN THE LEGAL FIELD

AI as used in Legal Practice

With regard to AI as applied to legal practice, continuous progress is being made on both litigation and transaction focused technologies. Specifically, predictive coding technology can potentially result in large efficiency gains in the practice of law. In the past predictive coding was mostly used in litigation space. But now it is starting to be applied to transaction practice also, thereby improving document review in mergers and acquisitions. Legal informatics as applied to transactional law space involves XML coding in transaction contracts and advanced systems for preparation of document.

Present applications of AI in the legal field make use of machines in reviewing documents, particularly when utmost trust and faith in the quality of document analysis is paramount, such as in litigation and due diligence. Predictive coding leverages small samples to cross-reference similar items, weeds out less relevant documents so lawyers may concentrate on genuinely important documents, creates statistically validated outputs, surpassing the accuracy of human review.

AI Used in the Administration of Law

- **AI used by Judges and Administrators in Decision-Making**

AI can be profitably put to use in the administration of law. Substantive legal or policy decisions may be made by government officials by making use of machines that employ AI technology. Judges make use of AI systems to make decisions regarding sentencing or granting bail to criminal defendants.

For example, a risk assessment has often to be made by a Judge while deciding whether to release a criminal pending trial, as to the danger of the criminal in the context of flight or reoffending. Today, software systems that employ AI are being increasingly used by judges in providing a score that tries to quantify a criminal's risk of reoffending.

- **AI used in Policing**

AI can also be used in the administration of law in the context of policing. AI technology has been primarily used by the Police in two major contexts. The first aspect is *predictive policing*. In this, machine-learning technology is used to perceive patterns embedded in previous crime data. Then, armed with such information, an attempt is made to predict the place and time of ensuing crime efforts. This data can in turn be used direct their resources and staff to regions they think to be most effectual. Another major use of AI in the enforcement of law is in technology related to facial-recognition. Police departments have regularly started to scrutinize crowds or try to point out suspects by the process of tallying data relating to photo or video with databases containing photos of persons who have formerly come in contact with the government or law enforcement agencies.

AI and Users of Law

AI also involves users of law, which include ordinary people, organizations, and companies that come under the governance of law, and are using the instruments of law (e.g., contracts) to manage their personal and business ventures. Many companies are using business-logic policy systems for the purpose of complying with the law. They are private expert systems that comprise general, computer-based rules classifying company activities that may comply, or not comply, with several government regulations. For example, for ensuring compliance with complicated import/export regulations, a company may use logic and knowledge-representation techniques in creating a model of relevant laws. Such model may then be

used to keep their internal processes refrained from performing actions violating the said laws.

V. UTILITY OF ARTIFICIAL INTELLIGENCE TO THE LEGAL SYSTEM

In today's world, legal information explosion has led to many professionals maintain the log for the tons of data involved. AI simulates certain functions of human behaviour and is a subset of computer science, and is applied in making the system operate like human intelligence. Machine learning has a feature called data analytics which aids computers in learning by itself on the basis of past experience, which characteristic is called *data analytics*.

AI aids the legal system to function more precisely than human intelligence by controlling the manner in which it operates in investigation. AI has made inroads into the legal system and several lawyers are embracing AI to procure directions, assistance, for analyzing contracts, to manage legal cases. AI is a great help in predicting results with insights.

The legal field comprises huge amounts of data with regard to cases and laws. These consume a lot of time for analyzing them minutely and meticulously. Smart technology has to be adopted by the institutions which maintain regulatory data, as well as Courts for the maintenance of client records and accounts. Since the performance of AI is akin to a human brain, advanced automation helps lawyers to work out complex projects also.AI is adept in providing finer, speedy and more precise results than individuals.AI, instead of placing lawyers out of work, can literally intensify legal work by making the mechanical tasks streamlined, thereby imparting to lawyers increased time for spending on problem-solving and abstract reasoning.

Communication

Communication with both local and global networks of both private and public sectors is possible through AI integrated applications. Legal drafting and access to legal documentation are a few examples.In addition to machine-to-machine communication, AI makes possible machine-to-person and person-to-person communication also. Legal hurdles like cyber-crime and speech infringement can be resolved as a result of overall benefits of communication. Clients who are in far off places can be counselled and provided with legal solutions by way of tele-conferencing.

Integration

Integration means the benefits obtained from the consolidation of several disciplines under one roof like corporate law, telecommunications, data processing, information technology, and mass communication media. Another aspect of integration is the assimilation within various AI technologies like machine learning, deep learning, predictive application programming interfaces, cognitive computing, image recognition, natural language processing, and speech recognition. The focal point in the legal field is to combine these technologies and applying the same to the inter-disciplinary theories of the related subjects. Legal informatics in tandem with the integration of theory and technology has yielded several favourable results for corporate law. Some examples are computed argumentation, employee legislation, IP protection, data protection, drawing up e-contracts, and automated judgment making. Cross-platform mobile app development and Android app development are fields that specifically work at such integration mechanisms.

Penetration

The subject of law being so vast, that when approached manually, innumerable entities are left untouched. These untouched fragments of data might hold a vital piece of information. AI will leave no leaf unturned. AI will make available any important legal data, existing anywhere over the globe. AI speeds up the entire legal framework by introducing automation of all vital entities, and keeping the entire framework logical and transparent, making it very easy to work with vast data handling and complicated legal structure.

VI. APPLICATIONS OF AI TO THE LEGAL FIELD

Machine Learning in the Legal Profession

- ### Legal research
AI can group documents together on the basis of ambiguous shared qualities. Thus, it simplifies the research process, thereby saving lawyers' time.

- ### E-discovery document review
AI can sort through millions of e-discovery documents and filter out pages that are not relevant to a case. This reduces the volume of discovery clutter and improves organisational performance, due to less potentially relevant documents for analysis by the lawyers.

- ### Litigation predictive analysis
AI goes through data from previous client scenarios and other vital public and private data at incredible speeds. This information can be utilised to predict future results on specific legal issues, and can be a great help in legal counselling. When the lawyers had to apprise their clients about the chance for an early settlement of their case, previously the lawyers depended on their intuition and experience, but now AI can provide substantive support. In spite of this, one obstacle is in predicting results for cases with unique fact patterns.

The AI and machine learning technologies come to the rescue of lawyers in overcoming the human element in areas where the lawyers get physically tired through overstrain, or in dealing with great volume of data repeatedly, or in converting un-connected data into cohesive information.

Video and Image Analysis
Criminal justice and law execution cases can benefit greatly from AI as it can obtain evidence and find criminals by analyzing the videos and images.Manual analyses of images and videos involve greater errors as there are bulk videos and images to scan through, which again requires more time to pin point the persons or objects in the video, but entails less accuracy. The expertise of AI helps in overcoming such manual errors. On the strength of algorithms integrated into the machines, AI helps to point out accurately the faces and objects in the incidents portrayed, and recognize clearly the eye colours and demographic patterns. The AI video and image analysis have the capability to learn of itself from past videos and images. It can resolve complex facial recognition and can replace human intelligence for such tasks.

Legal Analytics
Legal analytics is the process of extracting data to analyze and convert the same into actionable insights that help to make conclusions on diverse matters like forecasting, improvement, legal strategy and legal costs. Legal analytics can produce useful patterns regarding data relating to previous litigation, thereby increasing the odds of winning cases. For example, they can identify what patterns emerge from all of a judge's orders in previous cases. If a lawyer needs to anticipate the duration of a case, legal analytics can easily provide data about beginning to end proceedings of every judge. Also, it helps in collecting intelligence about the defending counsel, such as their customer lists, background, etc.

Computable Contracts
Computable contracts are those legal contracts in which the representation of the meaning and essence of the contractual obligations is such that they facilitate automatic understanding and application by computers. There are efforts by the researchers to mover the process into the world from out of the university laboratory.

Due Diligence
AI and machine learning applications extend immense help to law firms as they can compile due diligence reports near automatically in very less time, thus saving considerable time and money. Technology is very useful in this area as most of it is a very mechanical job. A set of parameters and documents is fed to the system, which data is easily

dissected and figured out by a reasonably good natural language processor.

Legal Research

Today, much of a judge's time is spent in analysis of the case and similar cases in the past, calculating the exact amount of damages and judgments pronounced in the past. With AI tools, he can speedily find a precedent, have exhaustive analysis and comparison done and he will have the advantage of having a ready judgment making his work very much easier. AI can also extend services to a judge by providing consistent sentences that decrease human biases, for example, in precluding different jail terms to two criminals in like circumstances. He can find the most relevant case laws and statutes pertinent to a specific legal situation or query at the touch of a button by searching through the various legal databases. The goal of legal research is to decrease the time taken for doing research by the user and make it more comprehensive and smarter. Thus, legal research is no longer a manual process and law students and legal associates need not scan through physical case law volumes to find a pertinent precedent. Efforts are being made to invent algorithmic models that can forecast case results.

Document Review

Smarter document management solutions help by automatically classifying, categorizing, connecting, and helping find documents in databases. Lawyers can review and categorise one per cent sample of documents by hand. Thereafter, the computer, on the basis of this learning, pin points the pertinence of the remaining 99 per cent of documents relevant to the case. AI can automate this lengthy process by spontaneously entering the entire contract, analysing it using NLP technology, and determining relevant as well as problematic portions. Contract review can be made more precise and meticulous by AI, and create a more efficient legal space.

VII. POLICY ISSUES

The working method and *modus operandi* of search queries and social networks gives rise to certain problems and policy issues in legal informatics. This is a by-product of the use of AI in the execution of law. These policy issues with regard to legal informatics differ across the world. For instance, in the European countries, it is a rule to destroy or anonymise data in order that the same cannot be utilized for discovery [5].

VIII. ADVANTAGES OF AI IN THE LEGAL SYSTEM

1. AI comes with the ability of identifying potentially relevant information from all the sources and file types.
2. AI can be applied in speedily analyzing contracts and other reports for finding mistakes and other information and for different nuances in the legal jargon.
3. AI helps by showing efficiency in legal data outcomes, and helps reducing overall costs. The number of billable hours can be reduced, as the time required in finding essential data based on record review is greatly reduced. This creates potential savings and reduces costs of litigation while handling a major case. It also helps in building a period-wise and fact-wise synopsis model. The legal team on the matter can then apply for its support more strategically for the report, which in service may reduce the cost of action.
4. AI helps by comparing legal reports and tools, and identifying missing information or causes, and uses technology to comb through all legal data and consolidate it into a single document, thereby enhancing its quality.
5. The automatic legal research and fact-finding function of AI saves lot of scarce time, energy and money.
6. AI improves creativity by providing lawyers with ample time to focus entirely on work that cannot be done by machines, who can

then focus on argumentation, presentation, and client negotiations instead of drudgeries of mechanical work.

7. An efficient lawyer can cull out constituents of a judgment constituting a binding precedent, and the chances of the judgment having been overruled. On the basis of this information, ML technology could conceivably help in identifying like paragraphs and parameters in other judgments.

8. Long working hours with tight deadlines are the bane of legal practice. AI, by using a much broader knowledge base, and reviewing millions of documents in much less time which a keen human eye may miss out, brings great respite to the lawyers from the ordeal of repetitive mechanical work.

9. AI renders repetitive and more monotonous work much more efficient and much faster. AI automates several high-volume, recurring tasks such as finding terms in a set of documents or filling out certain forms that otherwise take lawyers' focus away from more meaningful work.

10. AI empowers legal firms to increase their productivity by generating more work in less time.

11. AI can also help in calculating probability of the success of an argument. This permits the advocate to offer the most pertinent information in court.

12. Machines require no breaks during prolonged hours of work and are capable of working unceasingly without exhaustion or break-down.

13. Corporate legal departments may use legal informatics for such purposes as to manage patent portfolios [6], and for preparation, customization and management of documents [7].

IX. DISADVANTAGES OF AI IN THE LEGAL SYSTEM

1. There are limits to the use of AI in law. AI stillneeds patternsand rules and is ineffective in analysing for unique fact patterns and distinct cases. AI still cannot fill the function of abstract reasoning carried out by lawyers.

2. Apart from works involving underlying patterns or mechanical repetition, lawyers perform a variety of functions such as drawing-up persuasive arguments, interpersonal activity and advising clients over several complex legal scenarios. These functions are beyond the realm of automation and AI.

3. AI does not possess 100% accuracy, which is partly because of hindsight bias and partly due to limited emotional and social awareness. Political, moral, or social ramifications of the issue at stake are not taken into account by the algorithmic information processing method of AI. For example, AI is at a loss to give any inputs regarding emotional issues such as child- custody in a divorce matter.

4. Legal work is more linguistic and less numerical. Thus, machine learning applications, though adept at finding patterns even in random data, are ill- equipped to understand and interpret the hidden meaning in the trellis and maze of words of a language. This can be best done only by lawyers.

5. What AI cannot creatively think about all aspects of a legal problem, an an AI-human interaction can achieve more than either humans or machines can do on their own.

6. In instances where AI is used in criminal sentencing or in providing statistics on the probability of reoffending, the machine cannot detect the biases that may be present in patterns in past data on criminal sentencing, and dependence on AI would carry such biases into subsequent analysis.

7. AI machines suffer from complete lack of originality in thinking and creativity, which are the attributes of a human mind, and can come nowhere near to the intuitive abilities of a human mind. These qualities of a human mind cannot be replicated.

8. AI cannot be improved with experience, as is the case with humans, as machines are unable to change their reactions to varying situations.

9. Analysing, foreseeing and forestalling legal issues and predicting their solutions, is not that simple. Serious challenges will be faced by criminal law. For example, when an AI-based driverless car is involved in an accident in which damage is caused to both humans and property, whom should the courts hold liable. It is a dilemma as to whether AI intentionally or negligently caused injury. Apart from this, it is a question as to whether robots are a witness or an instrument for perpetrating crimes. AI is not amenable to analysing the above and like situations.

10. No fool-proof legislation for the regulation and structuring of this expanding industry has been drawn-up in India till date.

X. INDIA YET TO FULLY EMBRACE AI IN THE LEGAL FIELD

Compared with global trends, legal firms in India are prone to limited usage in terms of legal informatics, analytics and AI. It is a technological challenge to implement AI in the Indian judicial system. Judges evince interest in reducing the pendency of cases, but stop short of being conversant with AI technologies. They are rooted in the traditional modes of conducting legal work. Thus, innovation in legal technology in India is deplorable, as compared to other countries. Unfortunately, the corporate legal market in India is still quite small, with not too many corporate lawyers worth their name. Corporate legal departments, in general, are yet to optimize legal informatics in applying the same to the conduct of their legal functions.

XI. SUGGESTIONS TO EVOLVE BENEFICIAL AND CONSTRUCTIVE ARTIFICIAL INTELLIGENCE IN THE LEGAL DOMAIN

1. AI can speed up the procedure of the bulk of a company's documentation becoming digital. But prior to that, companies have to initiate the process of digitization of documents. There is a pressing need to work out the problem of India's extensive amount of non-digital commercial documentation so that a legally binding contract can be signed and stamp duty paid electronically on digital contracts.

2. There is an urgent need for more and more IIT ians take a grave interest in law and begin applying their software know-how to the legal field. The judiciary, too, needs to make the whole process of court records, pleadings, written submissions, court orders and judgments available online across the court establishments in India.

3. Companies also need to make sufficient R&D funding in evolving and expanding AI in the legal domain in Indian.

4. There is a need to study and spot the risk form AI. Better in-depth study and research of AI will indicate ways and means to control and stem the inadvertent damage through irresponsible use of AI as applied to legal informatics.

5. Transformation of the substantive culture of legal work, including legal education, is the arena where success has been lacking.

6. The culture of information society and its relationship with the nature of law and legal culture needs to be studied and better understood. Unfortunately, traditionalist legal perspectives have been taken for granted by information scientists, information professionals and lawyers, who work in legal informatics.

7. Lawyers who are interested in information technology gravitate towards information law rather than information applications to law.

8. It is of paramount importance that funding for projects must be based as much on the socio-legal context as on the information technology context.

9. The quality of legal software must be taken care of by the technology industry to avoid programming errors and counter cyber-attacks. Committed and vigilant research is

needed.

10. Stringent policies and their implementation has to be brought about to bridge the gap between the legal profession and academia in India.

11. Efforts must be made to develop talented workforce, who possess applied AI skills in a practical context and in relation to legal informatics.

12. Language and translation issues in India must be targeted and solved, in order to make collaboration from State to State easy, and to speed up legal information transfer and for expansion of legal business.

13. Young talent must be made to grapple with more appealing, challenging and front-line problems directed to develop the zeal for new innovation in the field of legal informatics.

14. The legal personality of AI and the question of attributing any intention to it are to be established. This is important as *mensrea*or intention is an indispensable element of criminal law jurisprudence in India. This essentially means that AI will possess a bunch of rights and duties. Means of fixing responsibility and accountability in respect of legal works done by AI are to be sought for and developed.

15. It is important to put in place a strict liability scheme holding the producer or manufacturer of the product accountable for harm done, irrespective of the fault. This is necessary as AI is regarded as inanimate.

16. Since privacy is a fundamental right, Personal Data Protection Bill, 2018, must contain rules to streamline the utilisation of information owned by an AI entity.

XII. CONCLUSION

AI has the advantage of providing precise information and gathering them in a single document saving a lot of time and money.

Bringing of AI technologies to the legal domain is of supreme importance as it improves the standard of documents and helps in discharging the several tasks efficiently and swiftly. By replacing AI in the legal system, there is the chance to overcome all manual works and chance to simulate human intellect, and this helps in doing legal work more accurately than individuals. AI's entrance into law is expected to generate entirely new group of legal jobs in the future, i.e., legal data analyst or machine learning legal specialist, that are a little difficult to envision, apart from reducing or eliminating some existing legal tasks, AI will significantly change the way legal businesses are conducted and law institutions are run.

While AI has a metamorphic effect on each industry and profession, its prospects for utility in the legal profession has not been tapped adequately. The disadvantage of legal services market is that they continue to remain exceedingly under-digitized, tradition-bound, and sluggish to adopt novel technologies and tools. Given the current state of AI technology, human cognition will likely be difficult to replace in areas of law or legal practice that involve judgment. What is largely being automated is the part of lawyering that is mechanical and repetitive. In the words of Richard Susskind, "*IT and the Internet have provided stiff competition for the phone, the ledger, the library, and the filing cabinet, but the substantive work of lawyers has yet to be reconfigured.*"

AI can be better employed as a research rather than an adjudicatory tool as it cannot grasp questions of serious social dynamics. It cannot dispense with the need for lawyers. It is beyond imagination that AI will ever make obsolete the legal acumen and expertise. Still, it may very well assist lawyers both quantitatively and qualitatively, catching patterns and correlations between case studies that human eyes may not notice. So, the question is not whether AI can

replace lawyers, but how much it impacts the way a lawyer works. At the end of the day, lawyers' role remains vital to handling complexities of legal work with their unique expertise. But enabled by technology, lawyers are more productive, allowing them to represent more legal matters with greater efficiency and a higher degree of accuracy.

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