EMERGING AND FUTURE TECHNOLOGY FOR EFFECTIVE JUDICIAL GOVERNANCE

Justice A. Muhamed Mustaque High Court of Kerala

What is Artificial Intelligence?

Jugalbandi Chat Bot: Satya Nadella at Microsoft Build 2023



Artificial intelligence (AI) is the ability of a digital computer or computer-controlled robot to perform tasks commonly associated with intelligent beings.

Artificial intelligence is based on the principle that human intelligence can be defined so that a machine can easily mimic and execute tasks, from the simplest to even more complex.



Difference between AI and AGI

AGI is a subcategory of AI, and the former can be seen as an upgraded version of the latter.

Artificial Intelligence

- Computer system designed to perform a specific task or set of task based on provided instructions
- Artificial intelligence is often trained on data to perform specific tasks or a range of tasks limited to a single context. Many forms of AI rely on algorithms or pre-programmed rules to guide their actions and learn how to operate in a certain environment.
- AI is typically focused on solving specific problems
- No self awareness, consciousness, ability to think.
- Not capable of independent decision making or problem solving beyond the assigned task
- AI is in practical use today.

Artificial General Intelligence

- Theoretical development of AI, that would have human like intelligence, able to learn and understand any intellectual task without being programmed specifically for each one.
- AGI, on the other hand, is able to reason and adapt to new environments and different types of data. So instead of depending on predetermined rules to function, AGI embraces a problem-solving and learning approach — similar to humans.
- while AGI aims to perform any human task and exhibit Intelligence across various areas without human intervention, with a performance equal to or better than humans in problem-solving.
- Single, general intelligence that possess common sense and creativity and express emotions
- Would be capable of independent decision making and statement without human intervention.
- AGI is theoretical and yet to be made into reality.

Generative AI, What is?



Generative AI is a type of artificial intelligence technology that broadly describes machine learning systems capable of generating text, images, code or other types of content, often in response to a prompt entered by a user.

Generative AI models use a complex computing process known as deep learning to analyze common patterns and arrangements in large sets of data and then use this information to create new, convincing outputs.

The models do this by incorporating machine learning techniques known as neural networks, which are loosely inspired by the way the human brain processes and interprets information and then learns from it over time.



Integration of AI in Court processes

AI in a justice system can be directed towards improving administrative efficiency in courts and aiding in decision-making processes for lawyers, judges and litigants.



Improving Administrative Efficiency

- Developing task-specific narrow AI tools should be the first generation of AI innovation.
- This will provide sophisticated automation for banal and time-consuming administration processes
- Task-specific, narrowly tailored algorithms, trained through Machine learning, can be deployed to aid administrative functions, from something as simple as scheduling hearings and creating cause lists to more complex tasks like the discovery and review of evidentiary documents
- Use of AI would include smart e-filing, intelligent filtering/prioritisation of cases or notifications and tracking cases.



Improving

Decision

making

Al can include tools for intelligent analytics and research.

*

These tools can provide comprehensive legal briefs on cases, encapsulating pertinent legal research, identifying crucial points of law and facts, and thereby expediting the judicial process.



Intelligent tools, like legal bots, can be designed to help litigants with better-informed decision-making concerning their legal rights and easily and costeffectively access basic legal services.



For instance, a person may be a victim of a chequebouncing case and require some basic inputs on how to proceed legally. A bot could present interactive toolkits, prescribing next steps, including identifying facts for issuance of a legal notice, filing FIR, and even providing a prediction of success based on facts and established law. *ML* algorithms or deep learning technologies can be used more sophisticatedly, such as creating tools to aid judges in their decision-making processes.

A possible tool could aid the judge in cataloguing the requisite documents for such a claim and gleaning the relevant information that will allow the judge to determine if compensation is due, the party that is liable to pay, and the value of compensation



Need for open access to judicial data

→ Current ML and deep-learning techniques are heavily reliant on accessible data

→ Once such datasets are readily available, AI driven technologies can be realised for augmenting administrative efficiency and the quality of decisionmaking



CHALLENGES OF AI



Short term Challenges



Ensuring transparency and explainability

- AI-driven technologies introduce instances with known inputs and outputs, but the transformation process between them remains unknown.
- Lack of transparency in these processes is commonly called the 'black box'

- The rationale and mathematical codes behind such algorithms are often kept confidential, making it challenging to scrutinize their basis.
- The involvement of the private sector adds to the opacity of AI systems and complicates the issue.
- Private companies typically develop innovative technologies, enjoying legal protection due to trade secrets, creating a situation akin to a "legal black box.
- Lack of transparency in algorithms leads to issues of explainability.
- Majority users lack the training to understand complex algorithms and their operations.





Asymmetry of information between Al solution makers and users hampers scrutiny and questioning.

For example, Northpointe, a private sector company, developed COMPAS, illustrating this scenario

> Disclosure and external audits are necessary to enhance transparency and explainability

The problem with the United States' use of COMPAS

COMPAS analyzes 137 pieces of information to generate a risk score from 1 to 10, categorized as low, medium, or high risk. COMPAS, being a private sector product, operates with a proprietary procedure that lacks transparency and public scrutiny.

ProPublica, an NGO, examined COMPAS assessments and exposed racial bias in the algorithm. Black offenders were nearly twice as likely as white offenders to be flagged for a higher risk of recidivism, even if they did not re-offend.

White offenders with a higher likelihood of reoffending were labelled lower risk, showing opposite results.

Bias against black defendants was observed, despite race not being a predictor.

https://www.propublica.org/article /machine-bias-risk-assessmentsin-criminal-sentencing



Disclosure and Transparency

Risks:

Increased disclosure and transparency have inherent risks.

Explanations can be hacked, leading to vulnerabilities in Al systems.

Companies could face legal actions and regulatory consequences due to disclosed information.

In the justice system, databases may contain sensitive personal information.

Greater disclosure could jeopardize individuals' informational privacy.

The conflicting interests of disclosure and security must be carefully balanced.

As AI becomes more integrated into justice systems, finding the right equilibrium between transparency and safeguarding privacy becomes crucial.

AI/ML Biases in Justice:

AI/ML systems can create biases, intentionally or accidentally, affecting fairness in justice. Training on large datasets often leads to replicating biases from original data.

Developers' personal biases can amplify the problem

Systemic Bias Replication:

Al systems can inadvertently replicate biases prese in initial datasets. Personal biases of algorithm developers can furthe impact outcomes.

Preventing data and design biases that may perpetuate social inequalities Unaddressed bias may result in prolonged discrimination against certain communities.

Continued use of biased technology can lead to large-scale discrimination.

Long-Term Discrimination



Creating decision support systems that supplement and not supplant human judgment

Al in the Justice System: Supporting vs. Supplanting:

- Al's role in the justice system can be divided into decision support systems and technology replacing human judgment.
- Indian judiciary recognizes the need for human judgment in just decision-making, leading to a focus on AI as a support system.
- Al technology innovation in the Indian justice system is at an early stage of development.
- Fully replacing human judgment with technology is not currently feasible.





The Indian judiciary has repeatedly identified that AI cannot replace human judgment, which is necessary for just decision making. Therefore, the manner in which the justice system uses AI is primarily in the form of support systems and augmentation tools.



High caseloads and limited resources might lead judges to rely on AI systems without thorough consideration.



Raises concerns about judicial decision-making being delegated to algorithms.



Al technology has the potential to transform judicial processes, potentially overshadowing case-specific reasoning with algorithmic outcomes.

Al Act Europe

Prohibited:

Applications that comprise subliminal techniques, exploitative systems or social scoring systems used by public authorities are strictly prohibited. Also prohibited are any realtime remote biometric identification systems used by law enforcement in publicly-accessible spaces.

Eq: voice-activated tovs that encourage dangerous behaviour in children

Eg: Al algorithms sending tech job openings to men but not women.



High Risk: These include applications related to transport, education, employment and welfare, among others. Before putting a high-risk AI system on the market or in service in the EU, companies must conduct a prior "conformity" assessment" and meet a long list of requirements to ensure the system is safe.



Limited Risk:

These refer to AI systems that meet specific transparency obligations. For instance, an individual interacting with a chatbot must be informed that they are engaging with a machine so they can decide whether to proceed (or request to speak with a human instead).

Minimal Risk:

These applications are already widely deployed and comprise most of the Al systems we interact with today. Examples include spam filters, Alenabled video games and inventorymanagement systems.





How Does a Blockchain Work: A Step-by-Step View





the transaction is

created

2



The block is broadcasted to all the nodes of the network



Chief Justice Dashboard using ML in Kerala

Login Page - DigiCourt Application System (kerala.gov.in)



Roster	
BenchName 💙 Case T	ype 🗸

selected Roster					
	BenchName	~	Case Type	~	

Machine Scrutiny(No man ware is involved)-Bail: No. of cases scrutinised: 3796

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Cyber security with AI

Data on cyber threats on judicial infrastructure

Security-Fortinet Endpoint Detection and Response(EDR)



Al holds the power to transform the cybersecurity landscape.

AI can swiftly identify and pre-empt potential threats.

Traditional methods would take 3 weeks to identify threats

Al-driven early detection and prevention (EDP) can identify and prevent threats within a second.



Security-Fortinet Unified Threat Management (UTM)



CYBER ATTACK ON GOVERNMEN T WEBSITES

Year	Number of Attack	Number of Data Breach	Detected and Prevented by Cert-In
2022	50	8	3,24,620
2021	42	7	4,32,057
2020	59	6	2,83,581
Online Dispute Redressal Mechanism



How it works?

- Online Dispute resolution (ODR) helps the litigants/parties in dispute to meet together and resolve the issue without logistical barriers.
- It is essentially a dispute resolution process which utilizes network-based, Information Communication technology (ICT) to resolve disputes.
- It is the substitute for the traditional method of face-to-face dispute resolution, like processes such as arbitration, negotiation or mediation.

Virtual Courts in India

- What is a Virtual Court?
 - Virtual Court is a concept aimed at eliminating the presence of litigants or lawyers in the court and adjudication of the case online.
- The First Born is a Virtual Court for Traffic Challans
- Proposed Virtual Courts are envisaged in Motor Accident Cases and cases for offences under Section 138 of the Negotiable Instruments Act
- How will the Virtual Courts transform justice administration in India?

VCOURTS. GOV.IN



Settle your case online on virtual courts

Y Proceed Now

About Virtual Court

In the current scenario facility is provided for Litigants to file the plaint electronically through e-Filing and also pay the Court Fees or Fine online through pay ecourts govin. Litigant can view the status of the case also online through various channels created for service delivery. However for adjudication purpose the Litigant may have to appear in person or through the Lawyer in the Court. Virtual Court is a concept aimed at eliminating presence of litigant or lawyer in the court and adjudication of the case online.

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SEARCH OPTIONS

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Display of Case Details

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Clean Sheet Design for 138 NI Act Cases- By PUCAR



#1 Illustration : Verifiable Digital Evidence





#2 Illustration : Expanded Jurisdiction



#3 Illustration : Rule-based Processes

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Complainant Advocate		anjay Ahluwalia	Date of Cheque Dep	Date of Cheque Deposit 05/05/2023		
Complainant Advocate Bar IE		IR3768yu9	Cheque Amount	Cheque Amount Rs. 10,00,000		
Respondent Name		bir Gupta	Reason for Cheque	Reason for Cheque Issue Repayment of Loan Am		
Respondent Advocate		Irunali Chaturvedi	Date of Cheque Ret	um 06/05/20:	06/05/2023	
Respondent Advocate Bar ID		11	Date of Demand No	tice 11/05/202	11/05/2023	

In-built validations during complaint filing for autoregistration of cases

System-generated flags for the Judge at time of case admission

Tri Full Case File \sim Summary View \sim Constituent Elements: × A valid cheque should have been issued by the payer Complainant Submissions: View Documen Evidence: View Documen The cheque must be for the discharge of a debt or other liability in whole or in part \sim The cheque was deposited within six months of drawing the cheque or within the validity period \sim Cheque is returned by bank as cheque amount is more than available in the account for disbursal \sim The payee issued a written notice to payer within 30 days of receiving information on cheque return \sim The payer should have failed to pay cheque amount within 30 days of receipt of the said notice \sim The payee filed a complaint within 1 month from date of expiry of 30 days for response to notice \sim

Case details arranged by 'Constituent Elements' to quickly establish facts

#4 Illustration : Proactive Multi-channel Communication

Example : Issuance of Summons



All communication from the court to either parties / advocates can be made proactive and

#5 Illustration : Asynchronous Proceedings



Additional submissions / actions proposed to be asynchronous | Specific submissions / actions may be different for criminal compared to civil cases

#6 Illustration : Seamless Integration with ADR



Clean Sheet Design for Motor Accident Claim Cases- By PUCAR



Motor Accidents Claims Tribunal-Automation

MV-INI-01 - Motor Vehicle Amendment Act 2019 Procedural Changes



MV-INI-02 - Automated payments



MV-INI-02 - Automated payments



MV-INI-03 - Automated notices to Insurers



MV-INI-04 - E-Certified copy of judgments at Tribunals







Quill Bot



Research

Browse through multiple search results without opening another tab with our built-in web search

Write

Harness AI to write faster and never worry about getting stuck ever again



Enhance

Make sure there are no mistakes with our advanced grammar checking and analytics

OpenNyAI



Tinkerspace

TinkerSpace would be the first Hub of its kind where anyone could walk in and learn exponential technologies and coding for free. The space is set up and run by startup entrepreneurs and technologists from the state who have created a great future through learning and building technology.



ChatGPT based Al bot **Helping Police** to Solve the Case



<u>Jugalbandi</u>

Jugalbandi is a **free** and **open** platform combining ChatGPT and Indian language translation models under the Bhashini mission to power conversational AI solutions in any domain.

Indian Legal LLM

Being developed by Al company Thoughtworks it aims to have a comprehensive LLM for legal systems aka ChatGPT for Legal. At Beginning Stage.

Their systems can evaluate contracts, Explain a section with precedence

Generate Arguments based on statements of facts



JIVA (Judges Intelligent Virtual Assistant

JIVA is currently being developed to assist judges in quickly identifying through voice or text conversations the laws and sections relevant to their

everyday needs



Just AI from Mosu

Just AI, an upcoming online tool, compares time, cost and success probabilities across litigation, arbitration and mediation. Users can input preferences and access legal service providers meeting their criteria. Plans include integrating Bhashini for wider language accessibility.



TERES_CORD

Working on Transcription services in dispute resolution accessible in multiple languages and affordable for users leading to their widespread adoption and deployment
Lawctopus

Aims to provide comprehensive interpretations of statutory texts and insights into how courts enforce laws.

Addressing challenges faced by legal professionals in utilizing the law effectively within the courts



Justice, Access and Lowering Delays Initiative(JALDI)

Aspires to develop an intelligent scheduling system for Indian Courts that addresses the challenges in case listing and improving efficiency

Thank You!

(1)