TECHNOLOGY FOR JUDGES

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Empowering Judicial Wisdom in a Digital Age

Core issues in Capacity building for judges in Al

Impact of use of Artificial Intelligence and Machine Learning in forensics





Tortious liability arising in relation to the use of AI and ML



IPR issues arising in relation to the use of AI and ML



Ethical and legal issues including crimes arising out of Al such as LLMjacking, shadow Al etc.



Future of forensics-AI & ML

AI and ML are transforming forensics, enabling investigators to analyze evidence more efficiently and accurately. **Benefits:**

Current Applications

- Facial recognition and identification
- Fingerprint analysis ٠ and matching
- DNA analysis and ٠ profiling
- Image and video • enhancement
- Predictive policing • and crime forecasting

AI in Digital Forensics

- Malware analysis and detection
- Network intrusion detection
- Data recovery and analysis
- Encryption breaking and analysis

Future Use Cases

- Biometric analysis (gait, • voice, etc.)
- Predictive forensic analysis
- Automated evidence analysis
- Virtual crime scene reconstruction

- Increased accuracy and efficiency
- Enhanced investigative capabilities
- Improved evidence analysis & presentation

Challenges:

- Data quality
- Bias
- Explainability
- Transparency
- Regulatory and ethical considerations

Tortious Liability in the Age of AI: Emerging Challenges for judges

As AI grows, judges face new challenges in determining liability for AI-related harm. How do they navigate these complexities?

Tortious Liability Scenarios

- Robotic Surgery: Liability for surgical errors caused by Alpowered robots (e.g., da Vinci Surgical System)
- Driverless Vehicles: Liability for accidents caused by autonomous vehicles (e.g., Tesla Autopilot)
- LLM Bias: Liability for harm caused by biased language models (e.g., discriminatory hiring practices)
- Drones: Liability for accidents or property damage caused by Alpowered drones
- Smart Homes: Liability for security breaches or property damage caused by AI-powered smart home systems
- Medical Diagnosis: Liability for misdiagnosis or delayed diagnosis caused by AI-powered medical diagnosis systems
- Financial Services: Liability for financial losses caused by Alpowered trading or investment systems

Key Challenges:

• Understanding Al Technology: Judges need to grasp complex technical concepts to determine liability

• Causation and Proximate Cause: Judges must determine whether Al systems caused harm and whether the harm was foreseeable

Standard of Care: Judges need to establish a standard of care for AI developers, manufacturers, and users
Liability Allocation: Judges must allocate liability among multiple parties, including developers, manufacturers, and

Intellectual Property Rights (IPR) Issues in AI: Emerging Challenges for judges

As AI redefines creativity, judges must rethink traditional notions of intellectual property. How do they balance innovation with protection?"

Key IPR Issues

•**Trademarks generated by AI tools:** Can AIgenerated logos and brand identities be trademarked?

•**Copyright on AI-generated content:** Who owns the copyright to AI-generated music, art, and literature?

• **Second-generation AI content**: Can AI-generated works be used as input for new AI-generated works, and who owns the rights?

• **Patentability of AI-generated inventions**: Can AI-generated inventions be patented, and who is the inventor?

•AI-generated datasets: Who owns the rights to datasets generated by AI tools?

•AI-assisted creative works: How will IPR be allocated when AI assists human creators?

•AI-generated software: Who owns the rights to software generated by AI tools?

Key Challenges of judges:

•Authorship and ownership disputes: Determining who owns AI-generated works, including works created by AI tools, collaborative human-AI creations, and datasets used to train AI models

•**Evaluating originality and creativity:** Assessing whether AIgenerated works meet the threshold for copyright protection, and determining the scope of protection

•**Infringement and liability:** Determining liability for IPR infringement when AI-generated works infringe on existing rights, including copyright, trademark, and patent infringement

•**Trademark issues:** Deciding whether AI-generated trademarks are eligible for protection and how to assess their distinctiveness and potential for confusion

 Copyright issues: Determining the copyright status of AIgenerated content, including music, art, literature, and software
 Second-generation AI content: Addressing IPR issues arising from AI-generated works that build upon or modify existing AIgenerated content

Black box problems

Al presents a significant challenge to transparency due to the "black box problem. Many Al forensic tools operate on complex machinelearning algorithms that lack explainability.

If forensic experts cannot fully understand or replicate how an AI tool arrived at a conclusion, this reduces accountability and raises legal concerns.

AI Ethics and Law: Emerging Challenges

AI database-Related Crimes



- LLMjacking(*Hijacking large language models for malicious purposes*):Determining liability for hijacking large language models
- Shadow AI(Unauthorized use of AI in organizations, posing security risks): Adjudicating unauthorized use of AI in organizations
- Theft of AI and datasets(Stealing AI models, data, or intellectual property): Adjudicating the value of stolen material and whether there was actually theft within the statutory meaning.

Metaverse Sexual Offences



- Metaverse stalking (*Harassment and stalking in virtual reality environments*): Determining jurisdiction and liability for virtual harassment.
- Virtual sexual harassment (Unwanted or coercive sexual advances or behavior in virtual environments): Adjudicating unwanted or coercive behavior in virtual environments.
- Metaverse rape(Non-consensual virtual interactions including virtual depictions of forcible sexual relationship): Defining consent and harm in virtual interactions and evaluating whether the statutory definition of rape can include such instances.

Other AI related Offences

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- **Non-Fungible Token (NFT) scams** (*Fraudulent use of NFTs for financial gain*) : Determining liability for fraudulent use of NFTs.
- **Deepfake crimes** (Use of AI-generated deepfakes for malicious purposes, such as identity theft or disinformation): Determining liability for AIgenerated content used for malicious purposes.
- **Theft and property crimes** (*Theft of virtual goods, currencies, or property, such as NFTs or digital assets*): Determining property rights, valuation, jurisdiction, ownership, control, transfer, and inheritance of virtual goods, currencies, and property, such as NFTs and digital assets, in theft and property crime cases.
- **Identity theft and impersonation** (Stealing or impersonating others' identities in virtual environments): Establishing identity, authenticity and attribution, navigating jurisdictional issues, assessing harm and damage, and balancing free speech and protection.

AI Ethics and Law: Other Emerging Challenges

Other AI related Offences

Type of offences	Challenges faced by judges
Distribution of explicit content including child pornography content using AI (Sharing explicit or non-consensual content, such as deepfakes or revenge porn, in virtual environments, and distribution using AI algorithms without human intervention)	Determining the scope and impact of explicit content distribution, assessing the harm and damage caused by non-consensual content sharing, identifying and prosecuting perpetrators who use pseudonyms or anonymity and balancing free speech with the need to protect individuals from harm
Harassment and bullying (Verbal or non-verbal harassment, including hate speech, in virtual environments)	
Financial crimes (Scams, phishing, or other financial crimes committed using virtual currencies [crypto currencies]or assets)	Understanding the technology and economics behind allocation of virtual currency and virtual assets, the working of crypto-wallets, understanding the tracing process and technology in identifying the money trail which has been handled through money mules and multiple accounts using AI, identifying and prosecuting perpetrators who use pseudonyms or anonymity, challenges posed by unregulated financial assets

Vision

- **Goal:** Empower judges with tech skills, not overwhelm them
- Long-Term Results: Ethical, efficient, and tech-savvy judiciary
- Call to Action: Use advancement in technology including AI, and machine learning to optimise workload and increase efficiency, without compromising on the judicial discretion and independence



	Respect the Bench, Empower the Mind	Al is a tool, not a replacement.
Wethodology	Learn Responsibly	Balance judicial independence with technological efficiency.
	Apply Thoughtfully	Understand the limits and possibilities of AI in law.
The Way Forward		
	Adjudicate Confidently	Navigate new-age legal challenges—from LLMjacking to metaverse offences—with clarity and competence.
	Lead by Example	Be part of a judiciary that embraces technology with wisdom.

AI Knowledge for Judges

A Progressive Approach to Judicial Al Competency

"Empowering judges with AI knowledge while preserving their essential human judgment"

• Core Program Elements

- o Ethical Frameworks for AI integration:
 - Balancing efficiency with judicial independence
- $_{\odot}$ Practical Applications of Artificial Intelligence
 - Focus on reducing workload rather than adding complexity
- \circ Cautious Integration:
 - Emphasizing responsible AI use in judicial functions
 - Maintaining judicial discretion when using AI tools
 - Understanding boundaries of appropriate AI application
 - Protection against technology dependence
- o False Positive Awareness:
 - Training on recognizing AI limitations and errors

"The future is not about machines replacing judges, but about judges mastering the machines."



THANK YOU

