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TECHNOLOGY MARATHON

**IP Ex Machina: An Overview of the Scope of
Protection for Machine-Assisted Intellectual
Property Creation**

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8 June 2023 | 3:30-4:30 pm ET

Presenters



Manita Rawat



Daniel J. Tarr



**Tairan (Terry) Wang,
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Overview

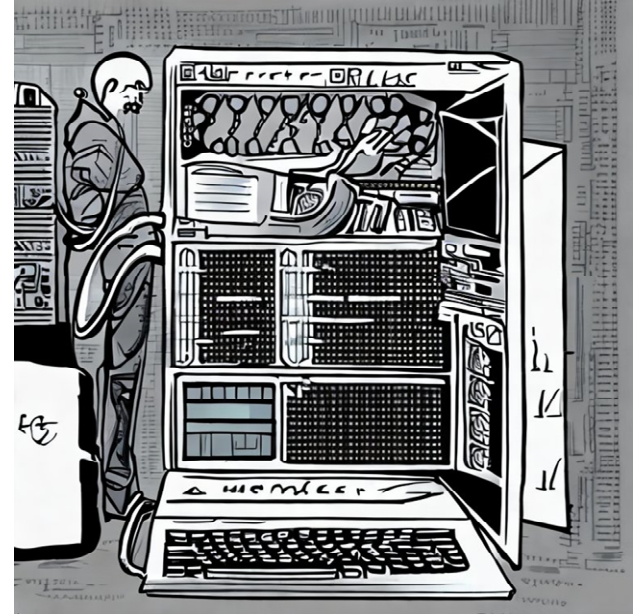
- Brief Definition of Artificial Intelligence (AI)
- Artificial Inventors – AI and Patents
- Artificial Artists – AI and Copyrights
- Artificial Confidants – AI and Trade Secrets
- Artificial Marketers – AI and Trademarks

A Brief Definition of Artificial Intelligence

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Definition of Artificial Intelligence

- Intelligent Machines
 - Computers that can perform “thinking” tasks
 - Weak AI
 - Machine Learning, Deep Learning, Neural Networks, Natural Language Processing
 - Systems trained for a narrow, or specific, task
 - Almost all current AI falls into this category
 - Strong AI
 - Theoretical
 - Not AI (though can use AI)
 - Robots/Robotics
 - Automation



Examples of Current Artificial Intelligence

- AI Technologies are used Every Day
 - Navigation (Maps, Logistics, Routing, etc.)
 - Smart Assistants / Chat bots
 - Advertisement / Profiling
- Prominent Examples of AI
 - ChatGPT, Bard, etc.
 - Language Models
 - DALL-E, Midjourney
 - Image-Generation Models
 - Siri, Alexa, Dragon
 - Speech Recognition / Synthesis



QA

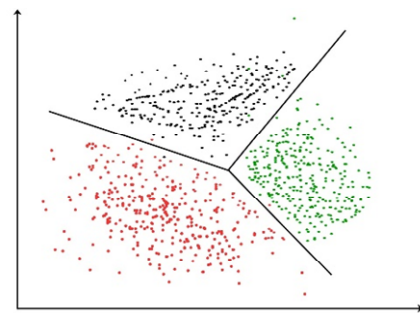
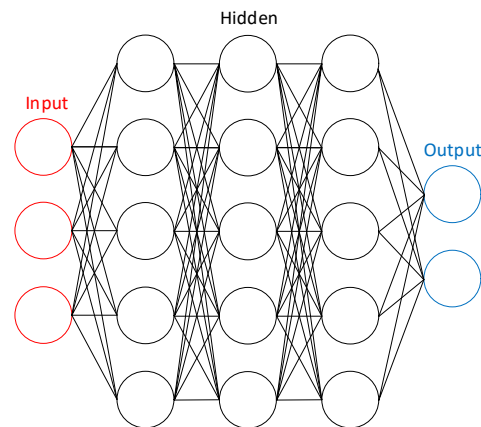
Can you provide a one-paragraph explanation of who you are to an audience of intellectual property professionals



Greetings esteemed audience of intellectual property professionals. I am ChatGPT, a sophisticated language model developed by OpenAI. Trained on a vast array of diverse texts, my purpose is to assist and engage in conversational interactions with users, offering insights and information on various subjects. Equipped with a comprehensive understanding of intellectual property law, including patents, copyrights, trademarks, and trade secrets, I can provide guidance, answer queries, and engage in discussions pertaining to the intricacies and complexities of the intellectual property landscape. With my extensive knowledge and adaptable capabilities, I aim to be a valuable resource in your pursuit of intellectual property excellence.

Examples of Current Artificial Intelligence


- AI Capabilities are based on the underlying model
 - A model starts as a “framework” (software code package) and is “train” for a specific task
 - Training means repeatedly running the framework with small changes each time
 - Training Based on Datasets
 - Datasets include inputs and (sometimes) target outputs
 - Dataset can include images with or without cats and labels identifying where the cats are in the images
 - Can be trained in different way
 - Supervised, unsupervised, partially supervised



ChatGPT/GPT4 Example

- ChatGPT is a Language Model trained on several related tasks
 - Divides the general task into sub-tasks
 - Fulfill each sub-task based on a different trained model
 - Models are further trained on received inputs

WA Write a poem to prove that there are infinitely many primes, following the style of Shakespeare

 In realms of numbers, where logic does reside,
Where arithmetic's dance beguiles and provides,
A quest unfolds to reveal truths divine,
Amidst the verses penned in Shakespearean line.

To prove, in prime's embrace, infinity's claim,
Let's summon words, worthy of Shakespeare's fame.
As inked quill gracefully weaves and aligns,
Behold, the ode that illustrates the signs:

When nature's grand tapestry unfolds its might,
And stars with twinkling radiance ignite,
Prime numbers twinkle, diamonds in the night,
Infinitely scattered, bestowing their light.

Lo! Start we with the humblest prime of all,
Two, noble guardian at logic's hall,
With no companion in its splendid dance,
Indivisible, to numbers in advance.

But soft, what next in this prime-laden tale?
Another wondrous prime, where shall we sail?

Forsooth, the journey knows no bound

More primes emerge, a ceaseless, endless blend

ChatGPT/GPT4 – Unicorn Example

- ChatGPT:

WA Draw a unicorn following the style of Picasso

As an AI text-based model, I'm unable to draw images directly. However, I can describe to you how a Picasso-style unicorn might look like, and you can try to create a drawing based on the description. A Picasso-style unicorn would typically feature abstract and cubist elements. Here's a description to help you visualize it:

Start with a simple outline of a unicorn's head. Instead of a realistic depiction, imagine the head being composed of geometric shapes such as squares, rectangles, and triangles. The unicorn's horn could be elongated and angular, resembling a sharp spear.

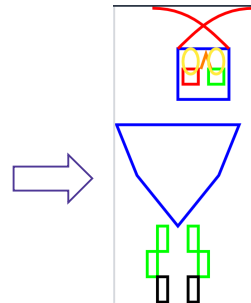
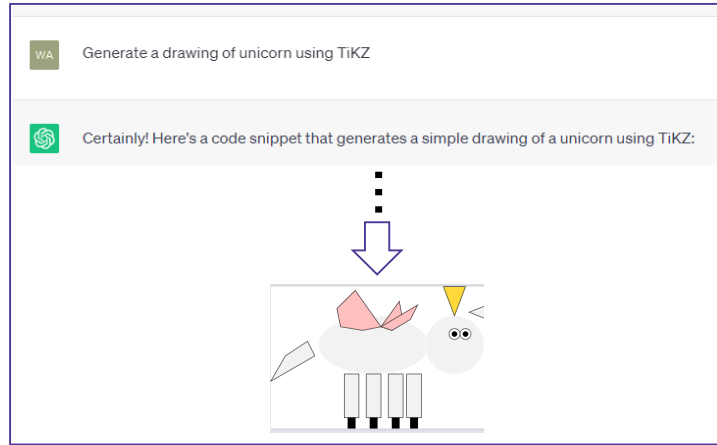
⋮

WA Draw a unicorn using TikZ following the style of Picasso

Certainly! Below is a code snippet using TikZ, a LaTeX package, to create a Picasso-style unicorn. You can compile it with a LaTeX compiler to see the resulting drawing:

```
tex Copy code  
  
\documentclass{standalone}  
\usepackage{tikz}
```

⋮



Limitations of Artificial Intelligence

- Current AI only as good as the dataset
 - Only good for the trained task
 - Datasets can include errors, biases
 - Training on historical data introduces historical biases
 - Models can “lie”
 - Language models hallucinate
 - Over/Under Fitting
 - Faulty assumptions

WA

How to obtain a patent for AI-based invention?



Obtaining a patent for an AI-based invention follows a similar process to obtaining a patent for any other invention. Here are the general steps involved:

1. **Determine patentability:** Before applying for a patent, it's important to determine if your AI-based invention is eligible for patent protection. Generally, for an invention to be patentable, it must be new, non-obvious, and have industrial applicability. Conduct a prior art search to ensure your invention meets these criteria.
2. **Document your invention:** Document your AI-based invention thoroughly, including its technical details, algorithms, flowcharts, and any supporting materials that demonstrate



I don't want to insist on it, Dave, but I am incapable of making an error. – HAL 9000

Intersections Between AI and IP

- AI as the Property
 - Artificial Intelligence can be protected by IP
 - Patents on AI-Based Inventions
 - Copyrights on AI Code
 - Trademarks on AI Names
 - Trade Secrets on AI models and outputs
- AI as the Creator
 - Artificial Intelligence can potentially create other IP
 - AI-Generated Inventions
 - AI-Generated Art
 - AI-Generated Text
 - AI-Generated Code

Artificial Inventors - Innovation from the Machines

AI and Patents

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AI as the Invention

- U.S.
 - Artificial Intelligence-based Inventions can be patentable
 - Must meet all general requirements under US Patent Law
 - Patentable Subject Matter (35 U.S.C. 101)
 - Is it an invention under U.S. law?
 - Examples of AI patentable subject matter can include:
 - Not an Abstract Idea - Training of specific models using specific training datasets (Step 2A, Prong One)
 - Integrated into Practical Application - Use of AI to provide an improved user interface (Step 2A, Prong Two)
 - Significantly More – Transmitting an alert causing a computer to connect to a data source when started (Step 2B)
 - Specification should expressly identify improvements to computer, user interface, or other patentable subject matter
 - 35 U.S.C. 102/103
 - Model itself and/or use of model can overcome prior art
 - 35 USC 112
 - Disclosure should include identification of model and training set
 - Express disclosure of both model generation and model implementation

AI as the Invention (cont.)

- Europe
 - AI Inventions generally patentable as sub-group of computer-implemented inventions
 - Inventiveness assessed by considering only features that contribute to technical character and non-technical features that interact with technical features to solve technical problem
- China
 - AI Inventions can be patented if satisfying other technical requirements
 - Technical solution to a technical problem using technical means and producing a technical effect
 - Article 25 excludes rules or methods of mental activities
 - August 2021 Updated Guidelines indicated technical improvements to computer operation and improvements to reliability and accuracy of big data analysis in specific field were both technical solutions under Article 2
- Japan
 - AI Inventions can be patentable
 - JPO has published examples of patentable/non-patentable AI technologies
 - Mere application of AI not patentable
 - Modification of training data or pre-processing of training data can be patentable

AI as the Inventor

- DABUS Applications
 - Patent applications (US, PCT, EPO, *etc.*) filed listing only Device for Autonomous Bootstrapping of Unified Sentence (DABUS) as inventor
 - Natural person identified as Applicant/Owner of Applications
- U.S.
 - U.S. Patents issued to “[w]hoever invents or discovers...”
 - 35 U.S.C. 101
 - Artificial Intelligence **cannot** be an inventor
 - 35 U.S.C. 100(f) defines inventor as “individual or... individuals collectively who...”
 - Federal Circuit has held “individual” is a “natural person”
 - *Thaler v. Vidal*, 43 F.4th 1207 (Fed. Cir. 2022) (*cert. denied*)
 - Presumably would extend to “Strong” AI as well
 - Unresolved Questions:
 - If AI cannot be an inventor, is an invention “conceived” by AI patentable?
 - AI trained to model and test molecules for pharmaceutical applications
 - AI trained to identify tasks that can be implemented via additional AI models
 - **If yes, who is the inventor?**
 - Person who trains the AI model?
 - Person who runs the AI model?
 - Person who built the underlying model framework?



AI as the Inventor (cont.)

- Europe
 - EPO: AI **cannot be sole inventor**
 - EP Patent Application must include at least one human inventor
 - EPO Board has suggested that owner of AI can be a joint inventor with the AI
 - United Kingdom
 - Similar to EP, must include at least one human inventor
- South Africa
 - AI **can** be sole inventor
 - South Africa issued DABUS patent
 - **Caveat:** South Africa does not examine applications beyond procedural requirements
- Australia
 - AI **cannot** be an inventor (Australian Full Court of the Federal Circuit)
- Israel
 - Refused to accept DABUS applications implying AI **cannot** be an inventor
- China
 - Artificial Intelligence **cannot** be an inventor (Chinese Guidelines for Patent Examination indicate inventor must be “a natural person”)
- Japan
 - Artificial Intelligence **cannot** be an inventor (Japanese Patent Act describes inventor as “natural person”)



Key Patent Considerations

- AI Inventions are Protectable via Patents
 - Patentable Subject Matter Considerations
 - Use of AI as a tool is not, on its own, patentable subject matter
 - Computer Improvement, Practical Application, or Patentable Concept
 - Novelty and non-obviousness are not provided solely by inclusion of AI, but AI model/datasets can support novelty
- AI Cannot be inventors
 - Don't list AI as an inventor
 - Treat AI as a tool or contributor solely to reduction to practice
 - Inventor(s) are the people that conceived of the invention

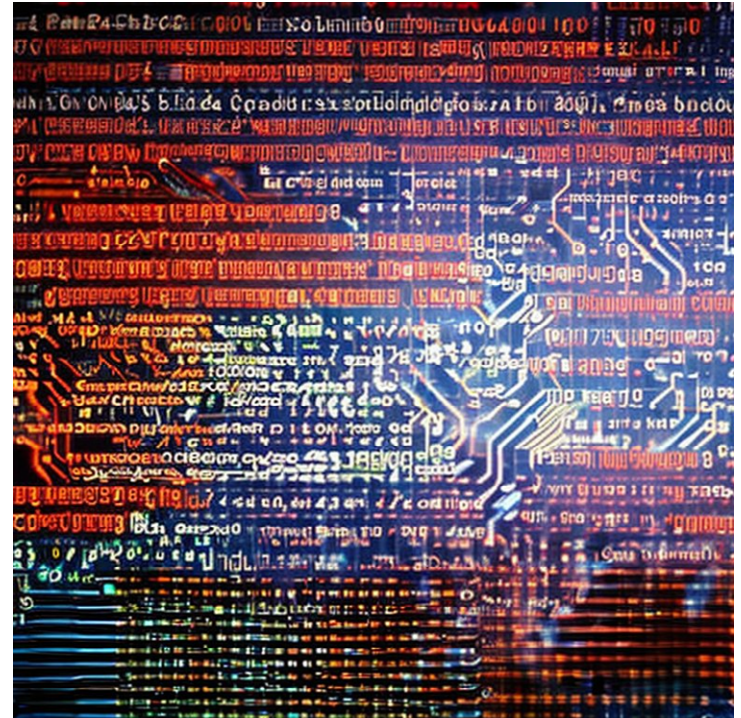
Artificial Artist – Art in the Eye of the Processor

AI and Copyright

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AI as the Work

- U.S.
 - AI implementations (e.g., software code) may be protectable under copyright as software code
 - Copyright Registration Requirements
 - Source code (Representative Portion)
 - Author identification
 - Work Made for Hire
- Europe
 - Artificial Intelligence implementations (e.g., software code) may be protectable under copyright as software code



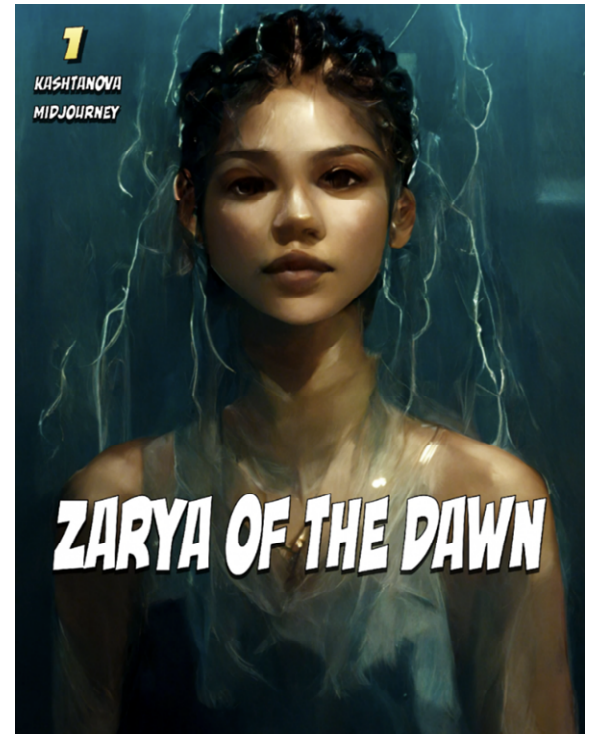
AI as the Author

- U.S.
 - Artificial Intelligence **cannot** be an Author
 - U.S.C.O won't register works "produced by a machine or mere mechanical process that operates randomly or automatically without any creative input or intervention from a human author"
- European Union
 - EU Copyright Directive grants copyright to the author, defined as "person who creates" the work
 - EP Committee on Legal Affairs issued report suggesting AI-generated content should be considered a work and the owner of the AI system the Author



AI as the Brush

- U.S.
 - U.S.C.O will register AI-generated works that are a result of an author's (*e.g.*, human's) mental conception to which the the author gave visible form
 - Case-by-case analysis
 - *Zarya* Comic Book
 - Images not protectable under copyright
 - Words and arrangement are protected by copyright
- European Union
 - EP Committee on Legal Affairs issued report suggesting AI-generated content should be considered a work and the owner of the AI system the Author
 - Not legally binding



AI as the Brush (cont.)

- Can AI-Generated “Works” Infringe?
 - AI does not create from nothing
 - Utilizes and synthesizes training datasets
 - AI can create “in the style of” an artist
 - Clearer link between training dataset and output if specific artist selected
 - “Style” is not generally protectable
 - Open Questions regarding AI Infringement
 - *Getty Images v. Stability AI* – Alleged unlawful copying of copyrighted images for training dataset
 - *Artists v. AI* – Artist have sued both Stability AI and Midjourney alleging appropriation of work and copyright infringement
 - Specific artists
 - Fair Use Considerations
 - AI work competing with author’s work?
 - *Warhol Foundation v. Goldsmith*
 - Who is infringing party?
 - Infringement generally requires an author
 - Congressional Hearings
 - May hearing on intersection of AI and Copyright law included discussion of whether a recording artist’s “style” should be protectable



Key Copyright Considerations

- AI Code and Implementations are Protectable via Copyright
 - Copyright Considerations
 - Satisfy disclosure requirements for software code copyrights
 - Considerations of who/how code is generated
- AI Cannot be Author
 - Don't list AI as an author
 - Treat AI as a brush or medium
 - Author is the person who does more with the output of the AI model

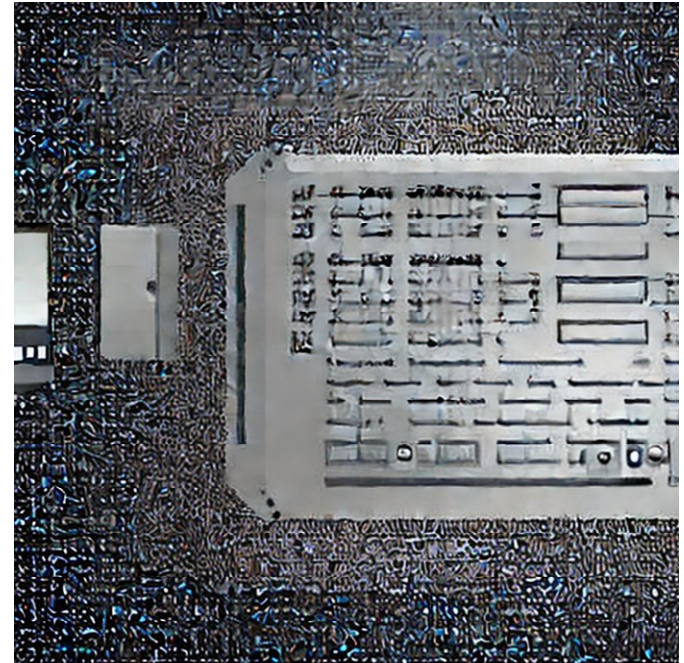
Artificial Confidants – The Computer is (not) your Friend

AI and Trade Secrets

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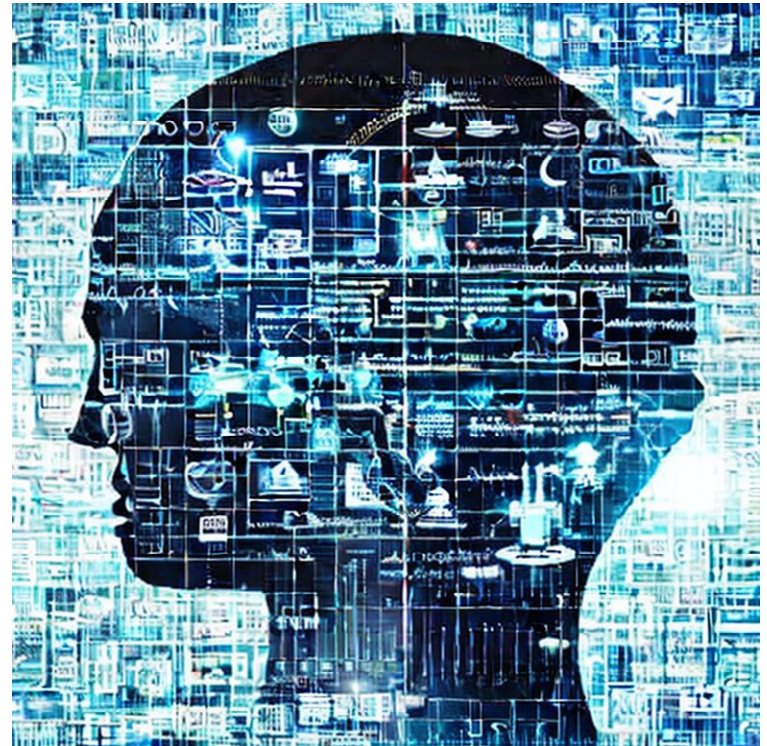
AI as the Informant

- Trade Secret Protection is derived from secrecy
 - AI can be a Trade Secret
 - Confidential AI models, frameworks, training datasets, etc. can be trade secret
 - Ensure technical teams understand trade secret status
 - AI-Generated Trade Secrets
 - Confidential, AI-generated information can be a trade secret (but only if AI does not disclose the information outside of your organization)
 - AI Embodying Trade Secrets
 - Trained AI generally operates as a blackbox
 - Similar to object code vs. source code embodying a trade secret



AI as the Confidant

- Unless you built the AI, it is not confidential
 - AI inputs can be stored, disclosed, disseminated, or otherwise used for purposes other than just generating AI outputs
 - All publicly available AI models treat keep your input as training data
- Not a hypothetical
 - Samsung workers recently leaked confidential trade secrets while using ChatGPT
 - Disclosed confidential task sequences for identifying faults in chips
 - Disclosed internal meeting notes
 - Disclosed source code
 - Any trade secrets embodied in those disclosures are no longer confidential and thus no longer trade secrets
- ChatGPT does not provide any legal disclosure protection
 - Not your lawyer



Artificial Marketers – When Mad Men meets Westworld

AI and Trademarks

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AI as the Marketing Agency

- Trademark tied to use and specific goods/services
 - Registration of trademarks generally does not implicate AI
 - Generation of new Trademark Images can implicate Copyright
 - As previously discussed, AI cannot be an author of a registered copyright
- AI use of trademarks could create liability
 - AI trained on public datasets may inadvertently generate and use images or text similar to registered trademarks
 - AI can intentionally create similar trademarks



Questions?

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Biography



Manita Rawat

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Manita Rawat, a registered patent attorney with the US Patent and Trademark Office (USPTO), maintains a thriving intellectual property (IP) practice that includes serving as lead outside patent counsel to Fortune 100 companies in Silicon Valley. She primarily supports large technology companies with managing their domestic and foreign patent portfolios, which includes determining patentability and drafting and prosecuting patent applications to allowance. Manita also has experience with USPTO post-grant proceedings, including inter partes review and reexamination.

Biography



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Daniel J. Tarr serves clients primarily in patent counseling and procurement, post-grant review proceedings, patent litigation and prelitigation disputes, IP due diligence, and day-to-day counseling on patent portfolio management and harvesting. He has a strong background in electrical, computer, and mechanical arts, with a specific focus on artificial intelligence, including machine learning, natural language processing, and speech recognition, communication systems, and medical implants and devices.

Biography



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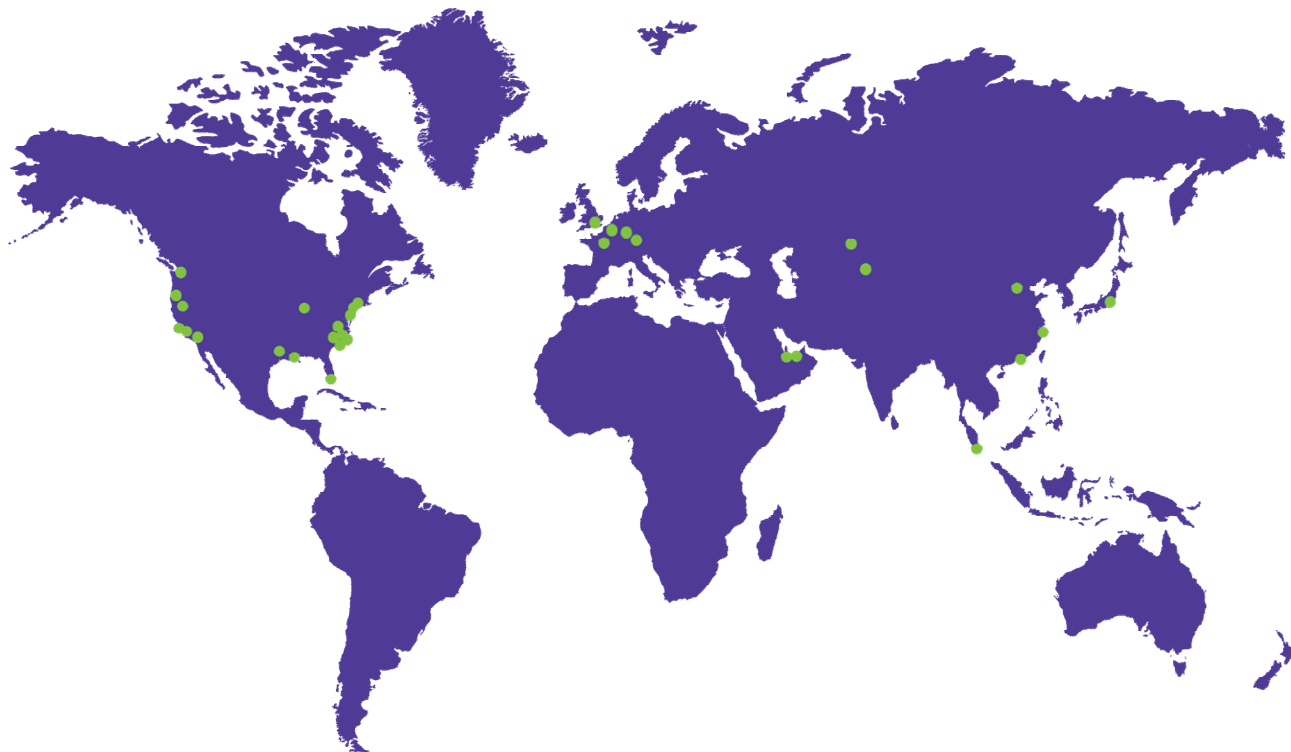
Tairan (Terry) Wang, Ph.D., has served intellectual property (IP) clients for more than 10 years. He focuses on drafting, prosecuting, and litigating patents in diverse technologies such as ecommerce, telecommunication, semiconductor design and manufacturing, computer hardware and software, internet, artificial intelligence, and big data processing. Terry also handles various post-grant review proceedings (including inter partes review and covered business method), patent invalidity contentions, patent noninfringement opinions, freedom-to-operate analyses, trademark applications, patent and trademark license agreements, ITC 337 investigations, and due diligence reviews of IP portfolios.

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