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5 PRACTICE TIPS

Evaluating Patentability of AI Inventions

Kilpatrick Townsend's **Kate Gaudry** and **Rodney Rothwell** recently participated in the Association of Corporate Counsel's National Capital Region's Summer Series: "Protecting Artificial Intelligence (AI) Innovations – Unique Challenges & Strategies." AI innovations encompass everything from machine-learning developments, to strategic training-set selection, to detecting and using a particular result from an AI technique that is of interest.

Mr. Rothwell offers up "Five Practice Tips for Evaluating Patentability of AI Inventions:"

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Identify potential types of "AI inventions": (i) New types of AI, which pertain to new or improved algorithms or combinations of algorithms. Examples of algorithms would include linear and logistic regression algorithms, automated neural networks, decision trees, and gradient boosting algorithms. (ii) New applications of AI, which pertains to how the algorithms are being applied to solve a problem. Examples include how training data is collected and processed, how the algorithms are trained, the models that are output and deployed from the algorithms, the output of the models, and how the output of the models is used in downstream processes. (iii) Innovations made with the assistance of AI, which pertains to use of AI to research and develop inventions in other tech areas such as drug discovery, industrial chemical discovery, generating new fintech solutions, creating new materials, and designing new products. (iv) Innovations made by AI itself, which pertains to new inventions created by the AI without a human inventor (at present time cannot list the AI as sole inventor and thus will need to include a human inventor who contributes to the "inventive leap" that ultimately produces the invention).

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AI subject matter eligibility: In the US, patent eligible subject matter is a moving target, driven by the continuing evolution of Section 101 case law. To add to the complexity, the patent and trademark office has also weighed in with its own training and guidance materials for analyzing patent claims under Section 101. Generally, under current guidance a claim is patent eligible if : It is not directed to a judicial exception. (abstract ideas, laws of nature and natural phenomena (including products of nature); Any judicial exception to which the claim is directed is integrate into a practical application; or The claim is significantly more than the judicial exception. The patent eligibility of inventions of new types of AI and new software integrations of AI will likely be heavily dependent on the evolving state of patent eligibility in the software space. As more cases are decided in favor of patenting software, more paths are created for patent eligibility of AI inventions. In contrast, patent eligibility of inventions developed with or by AI will likely depend on the particular field of invention.

In general when evaluating AI inventions for patent eligibility look at what

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In general when evaluating AI inventions for patent eligibility look at what improvements the technology is providing other than people's lives such as: (i) whether the selection or training of the model results in improved speed or accuracy, or the ability of a computer to perform a function it could not previously perform, (ii) whether the generation or filtering of training data results in models that require fewer computing resources or increased processing speed, and (iii) whether certain parameters, features or thresholds are more important to improving the processing speed or reducing network latency. Determine whether claims can be drafted to recite operations that cannot reasonably be performed mentally and/or operations that specifically contribute to the identified improvement. For example, are there features that could be included in the claims that improve "computer technology," such as the operation of the computers running the AI system, or improve "accuracy" or "precision," such as accuracy or precision of a diagnostic test implementing the AI system. Are there architectural features that could be included in the claims (e.g., structure of the neural network such as the input layers, hidden layers, output layers, parameters, hyperparameters, connections, and the like), and/or reasonably-claimed AI process features that provide a well-defined solution to a problem.

Anticipation and obviousness of AI inventions: While AI's acceptance in mainstream society is a new phenomenon, it is not a new concept. Nonetheless, AI is not a mature technology since it still requires a fairly high level of expertise to understand and implement, and there is a relatively high rate of new and diverse breakthroughs advancing the technology on what seem to be a weekly basis. Thus, as with most immature technologies, many of the innovations in AI are naturally new and non-obvious and there is a smaller volume of publications available as prior art to demonstrate that the fringe innovations are not new or obvious. Nonetheless, novelty and non-obviousness of inventions of new types of AI and new software integrations of AI will likely be more difficult to demonstrate as AI continues to be integrated in society, and as the volume of prior art increases exponential each year, more and more AI "building blocks" will be available for examiner's to build an obviousness argument. Evaluation of anticipation and obviousness of AI inventions should be performed in accordance with a well scoped patentability search. As with patent eligibility, novelty and non-obviousness of inventions developed with or by AI will likely depend on the particular field of the invention.

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Disclosure of AI inventions: Generally its understood that if the field of invention is predictable, less disclosure is required. Whether an "AI innovation" is in a "predictable" space will depend on the innovation. For example, when seeking protection for a rule-based AI system, less disclosure will likely be permissive as such a system is generally predictable and well understood; whereas when seeking protection for a deep-learning system that has a large number of hidden layers with weights that evolve during the learning and training process without human intervention or knowledge, then more disclosure will likely be required as such a system is less predictable and well understood. For domain-specific data used for training and running AI innovations, the question arises whether a general description of the data suffices, or whether the training data itself must be made available to the public to ensure sufficiency of disclosure and that the training of a similar model would be repeatable without undue experimentation. In many instances this data has significant independent value and making it publicly available could hamper alternative revenue streams or easily jump start a competitors development of a design around. And thus this value may influence the degree to which you decide to pursue patent protection in a particular case. At the present time, patent offices seem to recognize this sentiment and a general disclosure of how training data is to be collected and what primary features it should contain has typically been sufficient.

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