

Patenting research outputs – AI-implemented inventions

As we continue our series on considerations for researchers interested in patenting their research outputs, WP Thompson looks at the role Artificial Intelligence (AI) plays in emerging technologies and the problems that can be encountered when attempting to acquire a patent for an AI-implemented invention, as well as considering solutions to those problems.

The future is here...

Artificial Intelligence (AI) has been a hot topic for discussion in the last 12 months, heavily fuelled by the popularity, and controversy, of tools such as ChatGPT. Encompassing various types of computer programs, including machine learning algorithms and artificial neural networks, AI already looks to be becoming central to research in the chemicals sector, including in the screening for new molecules, predicting molecular properties, and optimising synthesis routes and conditions for driving chemical reactions. However, the patentability of new AI-implemented tools, and methods utilising them, can be quite complex.

...but is it patentable?

Case law regarding the patentability of AI-implemented inventions is limited. However, guidance from the European Patent Office (EPO) on the patentability of mathematical methods, computational models and algorithms has been available for some time, including special approaches for AI-implemented inventions, and last year the UK Intellectual Property Office (UKIPO) released guidance specifically on the allowability of AI-implemented inventions. Although worded differently, both UKIPO and EPO guidelines essentially exclude from patentability inventions relating solely to a computer program or a mathematical method. What, then, does this mean for inventors of AI-implemented inventions?

Any port in a storm

Mathematical methods and computer programs in isolation are not patentable before the UKIPO or EPO because they are considered non-technical. Amongst other considerations is that they are complex but something that the human mind could, theoretically, accomplish unaided. As such, a patent application for an AI-implemented invention should at least disclose the AI as being computer-implemented to introduce a technical feature. However, claiming the AI running on a generic computer is not enough to render the invention patentable alone. Rather, the invention must demonstrate a technical contribution – that is, an objective and reproducible technical effect that serves a technical purpose and is inventive. We will explain this requirement in the context of two safe harbours provided by the EPO.

Safe Harbour 1: Applications of AI

An AI program might be patentable if applied to a particular technological field, and linked to a specific technical purpose,

such as controlling a piece of apparatus or a process, or analysing real-world data and outputting actionable information. Again, vague definitions are unlikely to be enough, and inventors might consider filing multiple patent applications, limited to specific uses which are defined in the claims, to acquire protection for their research outputs. Of course, a balance needs to be struck between providing an enabling disclosure and keeping a “black box” method sufficiently opaque to protect proprietary data such as training data. To that end, careful drafting of a patent application to supplement relatively broad claims with support for narrowing amendments can be key to acquiring a patent.

Safe Harbour 2: Implementations of AI

Patentability might also be achievable if the AI is designed with technical considerations of the internal functioning of a computer system or network in mind. Specifically, it might exploit a particular technical property of the system, such as the memory or the processor. For example, the AI could be designed to effect a change in the system implementing it, such as more efficient data storage, or it could require and utilise particular features of the system, such as parallel processors not found in any generic system. As we said earlier, a vaguely defined computing system is unlikely to be enough, meaning specific details of the system may need to be claimed too.

Implications and applications

Acquiring patent protection for AI-implemented inventions is not straightforward, but it is achievable. Frontrunners in the race to patent AI-implemented inventions have taught us a lot, including the need for specific real-world applications or implementations. As the chemicals sector pushes deeper into the uncharted waters represented by AI, it will therefore benefit researchers to consider the real-world effects of their AI-implemented inventions and how they might be protected moving forward.

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