

# *Checklist for Software, AI and Machine Learning Inventions*

A brief guide for assessing whether patent protection may be available for software, AI, and ML based inventions.

## Pre-filing checklist for software, AI and machine learning patent applications

To better understand whether a new development in a computer-implemented technology, i.e. software, AI or machine learning (ML), is likely to be patentable, and whether the development is at a stage where patent protection should be sought, a number of considerations are set out below. Of course, seeking advice from a patent attorney is always suggested, as they can use their expertise to further guide the protection of your IP rights.

### Does the invention solve a technical problem?

To be patentable any inventions, and particularly computer-implemented inventions such as software and AI applications, must address a problem that is considered to be technical in nature rather than a business, administrative, financial, or organisational problem.

A good indicator of technicality is whether the invention is connected to a real-world technical system or process. For example, does any software interact with physical devices, sensors, manufacturing processes, medical equipment, communications systems, or computer hardware?

If the invention primarily improves marketing, sales, advertising, trading, recommendation systems, or other commercial decision-making processes, patentability may be difficult.

### Can you quantify the technical effect?

Is there a measurable improvement over what is known? Further, what specific improvement does the invention provide over existing technology?

These improvements may include faster processing; reduced memory usage; improved measurement accuracy; reduced error rates; reduced energy consumption; and improved system reliability.

With a “technical context”, a quantifiable technical effect could include the improved identification of objects within an image, more accurate information obtained from biometrics as part of a medical diagnosis, stronger encryption protocols, network management, sensor processing, or control of physical systems.

**Is the invention directed to objective rather than subjective outcomes?**

Technical inventions often involve objective measurements or control of physical phenomena. Inventions directed solely to user preferences or commercial outcomes may face patentability challenges.

## Are there defined inputs, outputs, and process/method steps?

Are you able to identify the inputs and outputs to any software or model along with any specific method steps that provide the improvements or advantages over what is currently known.

Any patent application for software should clearly define what data enters the system and how the data is processed.

*This may include:*

- what step(s) are performed by the software that are different than existing programs or methods; and, importantly,
- what output is generated by the software and why that output is useful.

If the invention relates to the user or training of a neural network, or the use of AI, can you identify exactly what contributes to the invention.

For example, do the improvements come from a new or specialised model architecture; the training approach; feature selection; parameter optimisation; novel inference techniques; or deployment architecture?

*Simply saying "we use AI" is rarely sufficient.*

## How much detail do I need?

For software inventions, and those around AI and machine learning it is not necessary to include the source code of a program or all of the training data.

Instead, the patent application must contain enough technical detail for a skilled reader to implement the invention. For software this may include the inputs, outputs and process/method steps mentioned above.

For AI and machine learning inventions, you should explain what type of data is required and why.

*This may include details on:*

- The source of training data – e.g. how was it obtained or generated?
- Data quality requirements – accuracy, completeness, consistency, etc.
- Data characteristics – structure, format, required fields
- Data representativeness – how large does the dataset need to be?
- Training methodology – is the model being trained in a specific manner?

## Have you captured the development journey?

As well as the technical details of any new software, it is important to record the challenges and any missteps during development.

*These may include:*

- Technical challenges encountered – e.g. did anything prevent the integration of systems or processes?
- Failed approaches – what didn't work and why
- Unexpected discoveries
- Why prior solutions did not work
- Design choices made during development

These details often become valuable evidence for inventive step arguments later. A patent should sell the story of the invention.

### Have you avoided public disclosure?

Publishing papers, presentations, blog posts, online demonstrations, GitHub repositories, conference talks, or investor presentations before filing may prevent a patent being granted.

## Are patents the best protection route?

If patent protection is not available for an invention, e.g. due to a prior disclosure of the concept or the nature of the advantages gained, consider whether parts of the technology may be better protected via other means.

*These may include:*

- Trade secrets – such as confidential know-how or unpublished code
- Copyright
- Database rights

For some AI systems, the training methodology or datasets may offer stronger protection as confidential know-how than through full public disclosure in a patent application.

Gateley is uniquely placed to assist with these matters, having our own IP solicitors and wider legal team who can advise on these trade secrets, copyright and database rights where necessary.

For IP advice for AI, software and machine learning inventions contact our experts below.

## *Get in touch*

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