



Artificial Intelligence and Intellectual Property

Some may think that artificial intelligence (AI) has featured more in Hollywood than in our daily lives. The depiction of artificial intelligence in films is, all too often, the super intelligent robot that can outperform us mortals at just about everything. Terminator™ style machines that threaten to take over the world, before someone is able to pull the plug.

The reality of artificial intelligence is, of course, very different. It's not Arnie; it's actually a set of technologies which can complement the capabilities of humans. The things that humans can do, and the things that artificial intelligence is suited to, are typically very different and very complementary.

Artificial intelligence is becoming more and more pervasive, touching every aspect of our day. It is carefully filing away your junk emails, it is improving your search engine, it is getting you to where you need to be, on time, while playing the music you want to hear.

But this is just a fraction of how artificial intelligence is transforming our lives. Aside from managing your daily routine, artificial intelligence is unlocking solutions in healthcare, agriculture, the environment and manufacturing. AI is playing a major role in drug discovery and symptom diagnosis and is a potential path to compressing the timeline to finding a vaccine to the virus that has threatened to engulf the world this year. Machines are amplifying human ingenuity in a way that was never previously possible.

But artificial intelligence is not new. The goal of producing intelligent machines has been one of the aspirations in the field of computer science for over seventy years, since Alan Turing dreamt of "machines that could think". However, it wasn't until the 1980s that artificial neural networks went mainstream, leading more recently to deep neural networks that can handle tasks that can be described as intelligent, like speech and image recognition. But neural networks are quite different to the brain. One difference is the amount of data needed. For example, it takes thousands and thousands of images to teach a machine to recognise a cat. A human brain would only need one or two examples.

The confluence of three components - big data, massive computing power and sophisticated algorithms - have driven this new revolution in artificial intelligence. In the industrial revolution, machines amplified the strength of our bodies; in this AI revolution, artificial intelligence will amplify the power of our minds. It is this close association of technology and human intellect, with language that personifies

machines, that is now raising questions as to whether artificial intelligence requires us to change the intellectual property framework.

This issue is being explored by a number of patent offices worldwide. The European Patent Office hosted its first conference on patenting artificial intelligence in 2018, and has followed this with stakeholder events and studies. The following year the United States Patent and Trademark Office (USPTO) held an AI IP policy conference, covering patents, trade secrets, copyright and trademarks, which was followed by a consultation later in the year. 2019 also saw the World Intellectual Property Organization (WIPO) begin a series of conversations on AI and IP along with a consultation on an issues paper, the revised version of which was published in May 2020. Most recently the UK Intellectual Property Office launched a call for views on AI and IP. The patent offices are also conducting comparative studies which could lead to greater harmonisation. It was good to see that at the start of 2020, representatives from the world's five largest patent offices (known as the "IP5") and WIPO formed a task force to address newly emerging technologies and artificial intelligence.

Among the questions being asked are, whether artificial intelligence can "invent" or "create" - can technology be said to have contributed any inventive or creative input? If so, what are the implications for ownership, infringement and the assessment of inventive step? Who should own the output of a system involving artificial intelligence when the system has been developed and trained by one person and used by another? As demonstrated by the report on "Public Views on Artificial Intelligence and Intellectual Property Policy" recently published by the USPTO, these questions are typically being answered by respondents to consultations in the context of the current state of artificial intelligence that is adapted for a particular task, such as image recognition or translation. Artificial general intelligence, which can be applied to any task is, for now, a hypothetical solution.

Any changes to the intellectual property system that inadvertently extend protection to the underlying algorithms or impede the use of data which has fuelled the growth in AI, could adversely impact innovation in this area. For patents, there already exists an established framework for assessing the patentability of computer implemented inventions which is applicable to computer systems implementing artificial intelligence. Ultimately, questions relating to intellectual property protection are best answered by understanding what incentives are needed to drive innovation for the benefit of the economy and society generally. These aims can be achieved by having a balanced intellectual property system where ownership rights are weighed against rights to use. Analysis should be evidence-led and firmly rooted in science, not science fiction. The IP Federation will continue to play an active part in what will surely be a complex and hugely important debate.

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