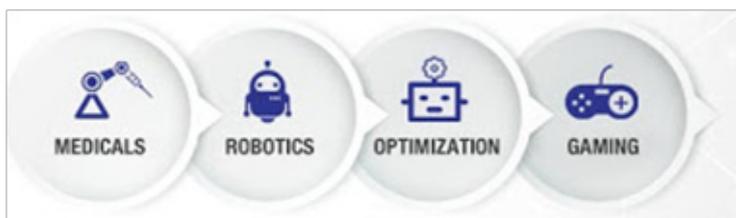


ARTIFICIAL INTELLIGENCE & INTELLECTUAL PROPERTY RIGHTS

Many of us might have watched Arnold Schwarzenegger's Terminator or heard about Benedict Cumberbatch starrer, 'The Imitation Game'. These movies revolve around extremely intelligent human-like machines and the Imitation Game, in particular, portrays the life of a profoundly unusual English mathematician, Alan Turing, who might have been the first person to work on intelligent machines.



The branch of Science which deals with making intelligent machines to behave in human-like fashion and the display of capabilities by machines which are tuned to possess human intelligence, is known



as Artificial Intelligence (AI). Turing's World War II code breaker is said to have kick-started the computer friendly algorithms that are designed to solve specific problems in a human-like fashion. A plethora of disciplines, such as Computer Science, Psychology, Philosophy, Sociology, Mathematics, Biology and Neuron Science contribute to the development of AI. Because of this, AI is now being used for problem solving, game playing, theorem proving, natural language processing and/or understanding, speech/pattern recognition, robotics, neural architecture, computer vision and engineering design analysis, amongst many others.



Some people believe that, in 25 years, a patent will be filed and granted without any human intervention! Though AI hasn't currently attained this level of intelligence yet, many believe there will come a time when AI will surpass all human intellect in all domains and start re-writing its own softwares and codes to re-programme itself to become the strongest entities on earth.

Isaac ASIMOV's
Three Laws of Robotics

- 1) A robot may not injure a human being, or, through inaction, allow a human being to come to harm.
- 2) A robot must obey the orders given it by human beings except where such orders would conflict with the First Law.
- 3) A robot must protect its own existence as long as such protection does not conflict with the First or Second Law.

IP Laws and AI

A draft report of the European Parliament to the Commission on Civil Law Rules on Robotics mentions that in the future, AI will leave no stratum of the society untouched and also calls on the Commission to elaborate criteria for an 'own intellectual creation' for copyrightable works produced through AI.



Now, there are machines which automatically create works which would qualify for a copyright protection, if it were produced by a human. There have

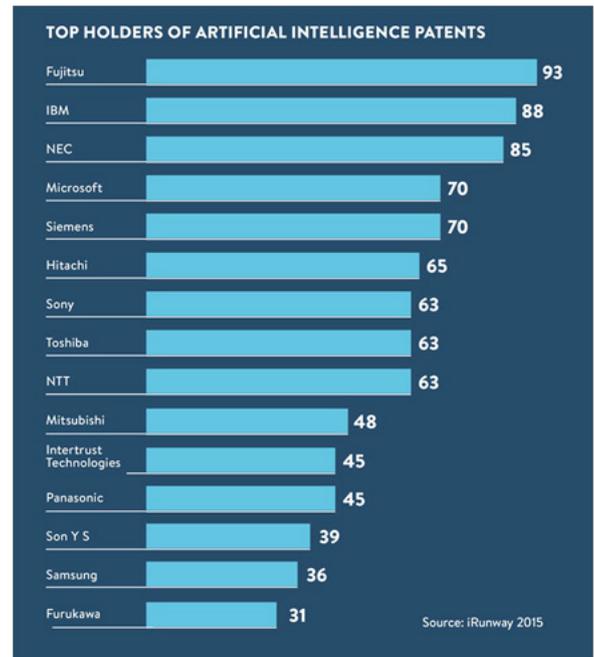
been several high degree computational creative innovations until now and this has sparked debates all over the world for the re-examination of copyright standards for AIs. Recently, a San Francisco court denied a copyright to a macaque monkey who clicked selfies which went viral. With copyrights for animals out of the picture now, a similar situation has arisen for AIs. Recently, many copyright offices across the world have already mentioned that they won't register machine produced works.

Similarly, under patent law, if novel inventions are made by AI machines, issues may arise regarding the ownership of such inventions. Without any human intervention, who will own the patents on novel inventions filed by AI machines? Will the machine/robot be the owner of future inventions? When ownership rights are distributed amongst different entities, who will be able to enforce such rights. And if an AI plagiarizes a creation or reproduces an invention, how will damages be determined? These are a few basic but puzzling questions which Patent laws now face.

With the monumental growth of AIs in every industry of the market, it is incumbent upon IP theorists and law makers to design laws which can be adopted in a world with AIs.

AI Market Scenario

As there are numerous looming uncertainties over IP rights and AI, tech-giants are now extensively competing in the patent land grabs. Google had attempted for the first time in 2015 to file patents on AI and it had filed six AI patents by the end of 2015. One of its patents cover a technology called 'dropout' where a method for neural network (mapping the human brain) learning was patented. According to many experts, this is a standard technique used by all AI researchers. Another patent relates to claims surrounding a 'parallel convolutional network'. This patent is being regarded as spurious by many other experts. Similarly, many other companies like Fujitsu, IBM, NEC, Microsoft and Siemens have multiple patents on AI related technologies and the number only continues to growth with each passing day. In a February, 2016 Cross competitor analysis of almost 1000 important AI patents, it was found that Google, IBM and Microsoft owned almost every single all-encompassing AI patents. This basically means that, in the future, these three tech-giants have a competitive edge over all the other players in the AI market.



Even the investments in AI technologies have skyrocketed recently, wherein venture capital firms like Accel announced 500 Million USD funds for various focus areas and AI topped their list of priorities. Similarly, New Enterprise Associates and Nervana Associates (which was recently acquired by Intel), have invested billions of dollars in AI. Many believe that the wave of investment and energy being poured into AI is making it mankind's greatest endeavours! India is also emerging in this sector, with companies like Apple acquiring many Indian companies such as- Tuplejump! According to sources, Apple was particularly interested in Tuplejump's 'FiloDB' project, which was capable of quickly analyzing bulk amount of complex data. Recently, Salesforce, an American cloud computing company acquired MetaMind, a company that sells natural language processing, computer vision, and database prediction tools and this acquisition is said to bring in millions into the current business space for Salesforce. Interestingly, increasing amounts of funding are being transferred to startups such as Sentient which received 143 Million USD during the beginning of this year. Since 2010, almost 967 Million USD were received by numerous other AI startups. As time progresses, this technology is only set to develop more, with companies like Facebook opening dedicated AI research labs in different parts of the world.

Artificial Intelligence: Sub-Industry Heatmap
2011-2016 (as of 6/15/2016)



helped save a person's life. It was said that the same would have gone undetected under conventional diagnosis methods. From autocorrecting our text messages to saving people's lives, AI has only begun influencing our lives in a great way. But IP Laws are far from matching the progress being made in AIs. Currently IP Law focusses only on human actors as IP creators/infringers. It's time now, for policy makers to come up with standards and liability criteria when it comes to IP surrounding AIs.

It will also be interesting to see how IP sharing works in the AI realm. Elon Musk has pledged a number of AI related patents for greener and cleaner technologies and these patented technologies are open for anyone to develop them further. It is also believed that the future of many industries depend on AIs and therefore, IP sharing will be a crucial aspect of the overall development agenda and sustainability. The AIs will slowly become a part of every imaginable industry and even though the European Commission has taken baby-steps in raising questions over IP Laws for AIs, the future is full of intriguing prospects for innovators and businessmen, alike.

The Future of AI and IP Law

With decades of R&D, IBM's AI engine Watson, is now capable of detecting a type of cancer in just 10 minutes and this once

