I'm Adding Some AI to My Product.
A Patent Should Be a Slam Dunk, Right?

This Patent Stuff and My Semiconductor Business – Part 34

Welcome to this post about patents and chips. Not a lot has been written about this combination, but there is a lot to know, especially for the innovators and entrepreneurs themselves. In this three-weekly series, I talk about various aspects, from a dual perspective of a patent agent and a semiconductor entrepreneur. If you like the article and read it on LinkedIn, give it a thumbs up, and/or click on Follow. If you like to work with us for your next patent, "contact us" info is on www.icswpatent.com. You can also subscribe/unsubscribe for short email alerts when the next post is available.

Right. Nobody has thought of adding AI to his product before. Of course, you're going to get a patent!

In 1981, I followed a university course called Artificial Intelligence (note my wording here). I was a bit disappointed, because I learned nothing about AI, not even what it was supposed to be. I learned about LISP, a strange programming language that because of its strangeness supposedly was very good for AI. My course was in Europe, and I learned recently that similar courses were taught in the US, under the same pretense. Looking back, there were other courses, like for pattern and image recognition, that were much more relevant for AI. LISP, of course, has been relegated to the sidelines, and I don't think it ever played much of a role in AI.

For a long time, AI research was progressing at a snail's pace, until in the 1990s a stubborn research team in Switzerland, and others, started making breakthroughs. The last two decades or so, the rocket has taken off. A few years ago, I could still write a patent that basically said I'm adding some AI to my product. It was for a large consumer electronics company. The engineers had basically given me a story that sounded like a 1960s science fiction novel, without much background of how or what. I improvised, ended up filing several patents, and although some faced critical examiners, a few were actually granted. I vouched I will not make any other attempts at being a science fiction author, and certainly not in the context of a patent.

Now, of course, everybody and the kitchen sink is touting products with AI, and filing patent applications with AI in them. In marketing you may get away without much more than chest banging. But when you file a patent, you're going to need to have an actual innovation. Following the herd has never been a good recipe for getting patents. You need to have something new and innovative. Saying your comb is now superior because it has AI and adjusts the way it arranges your hair based on machine learning with a deep neural net is probably not innovative. Unless you provide considerably more information about how you do it and why the results are unexpected and useful, an examiner is probably going to just shrug it off as silly.

The venture capital industry has pumped billions of dollars in AI startups the last three years. Two years ago, I compiled a list of over a hundred chip companies developing AI chips. I probably missed quite a few in China, and I heard not so long ago that somebody else had counted over two hundred AI chip companies worldwide. The number of software companies creating AI products or using AI in their products is probably a multiple of that. In all likelihood, a few thousands of companies are competing to create and use AI, and many of them are innovative. AI has never progressed as fast as it does today. And it is not a fad like IoT, where things that were dreamed up 20 years ago as "Internet appliances" (remember the term?) were renamed to nodes in the Internet of Things. In at least one market forecast, cell phones were also deemed to be part of IoT. That certainly helps to get to your 20 or 50 billion connected devices.

The point is not that IoT is completely fake (maybe only mostly), but that AI is real, and it will impact our lives in many ways. It will enable products and methods that are otherwise not achievable. It is already impacting medical devices, drugs, the automotive industry, and of course chip design. How long will it be before AI impacts AI?

Back to your semiconductor product, your innovation, and your patent application. If you are using AI (in your R&D department, not in your marketing department), and you've gone through the trouble of finding out what type of neural network is needed for the benefits you'd like your product to achieve, how many layers of neurons you need, how many nodes per neuron, what kind of activation functions you need, what kind of error function you need to perform the training you need, and hopefully, how to get your training data together, then you've done a great engineering job. Great engineering jobs are not patentable. But, you may have had to do something that wasn't obvious, that was different than the current state of the art (and yesterday's), then you may very well have something patentable. If you've done something that you're sure nobody else would have done because it sounds crazy and five other reasons, then you probably have a patentable technology.

The good news is that AI still has many high barriers. Overcoming them requires inventiveness. AI itself still has a long way to go, too. Consider that a neural network requires hundreds of thousands or millions of training cycles. A human can learn something by coming across it just seven times, or so. Currently, AI can learn, associate, recognize, synthesize and maybe a few more functions. How many aspects of natural intelligence are not covered yet? How many of these aspects can be useful in your chip, or its design?

If you're serious, your AI work can be a gold mine. And you can protect your gold mine with the appropriate patents. If you shoot from the hip, then go with your marketing department. They can do wonders with natural intelligence.

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