This paper provides a historical overview of machine learning hardware and software developments, as well as an analysis of the current situation and an opinion piece on how hardware and software interact and what we should focus on in the future. We are all aware that we have hardware, and that it is very inflexible and expensive to develop, so any type of software development, any algorithmic development may simply succeed because it is suited to the hardware that we have; this is the first thing I realized when I read the introduction statement about hardware lottery.

Intellectual traditions and readily available instruments may encourage scientists to shift away from some conceptions and toward others. In the field of artificial intelligence, the "hardware lottery" refers to when a research idea wins because it is compatible with current software and hardware (AI). This essay begins by emphasizing an important point: hardware is frequently overlooked by machine-learning researchers, despite its importance in determining whether ideas succeed. The essay and its follow-up were motivated by a simple desire to increase chip sales.

And I agree to the statement mentioned in the paper that capsule networks are the future of computer vision, the authors say something interesting about the difficulty of trying to train a new type of image classification architecture on domain specialized hardware. Hardware design has prioritized delivering on commercial use cases, while built-in flexibility to accommodate the next generation of research ideas remains a distant secondary consideration, GPU’s and CPU’s combined are general operations. GPU’s are good at matrix multiplies but CPU’s are good at a lot of other things, so the combination of these two is very flexible may be it’s just that capsule network are by algorithmic design are way harder to implement specialized hardware for capsule networks.

If you believe that future success will be dependent on combining deep neural networks with ever-increasing volumes of data and processing, then investing heavily in specialized hardware makes sense. Unlike deep neural networks, which task the model with learning an appropriate representation, symbolic approaches aimed to build a knowledge base and use decision rules to mimic how humans would approach a problem. This article reflects the fact that hardware lottery research is incomplete, and future prospects are being drawn to fill the void. Furthermore, the comparison of the human brain with deep neural networks and biological examples of human intelligence was very realistic.

In conclusion, I thoroughly enjoyed the article and learned a lot about the factors that completely define an idea's success or failure in today's modern world of technologies, software, and hardware advancement.