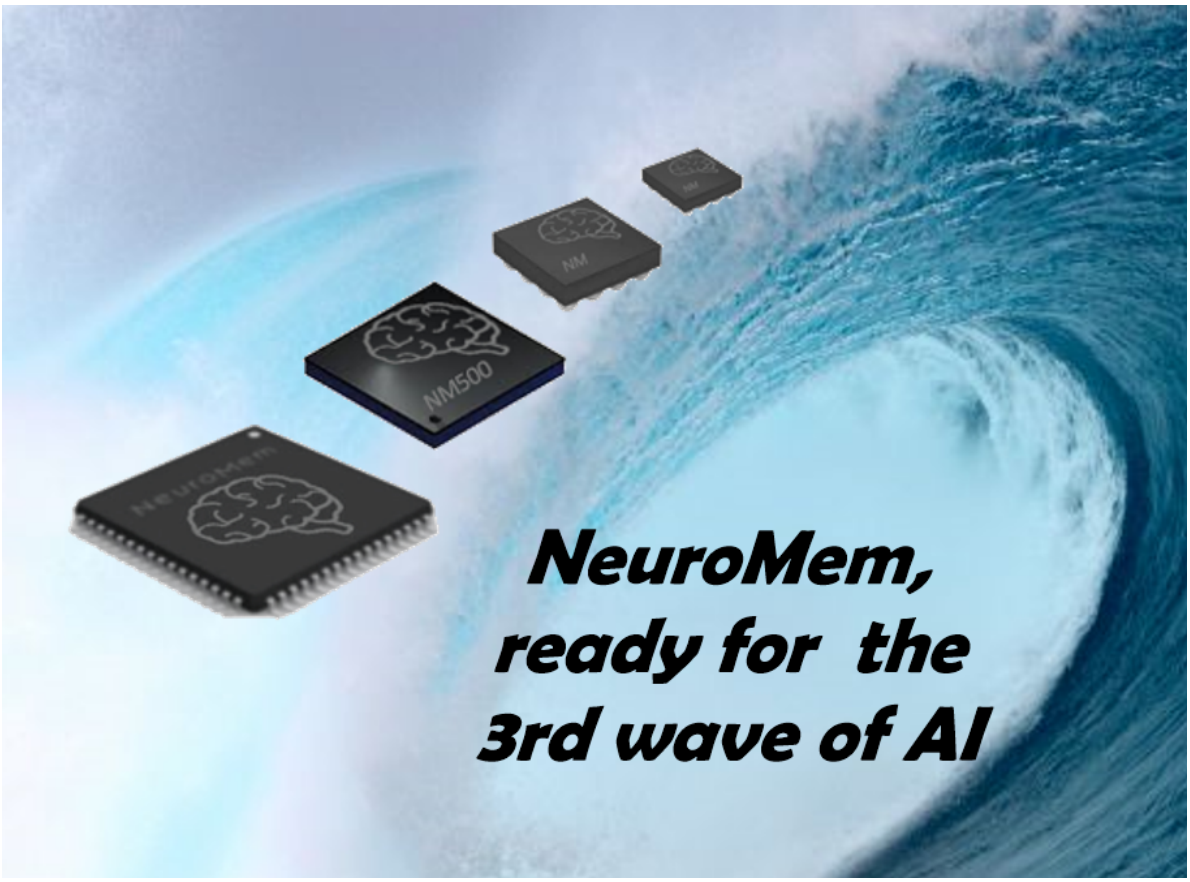
GENERAL VISION

NeuroMem is yet another brain-inspired chip, but it is shipping

by Anne Menendez | May 15, 2019 | Papers | 0 comments



In today's landscape of Artificial Intelligence, Deep Learning and its numerous inference engines are monopolizing the front stage, but other technologies have essential benefits such as field training and real-time adaptivity, novelty detection, learning causality and traceability.

Among them, the NeuroMem NM500 chip is a digital neural network chip capable of intrinsic learning and recognition of patterns derived from multimedia such as images and sounds, but also instruments, text and

other data types. Manufactured by nepes (Korea) under a license from General Vision, the NM500 features 576 neurons which can be trained on small datasets and cleverly tuned to deliver the best compromise between throughput and accuracy for a given application. For example, one may prefer to train a NeuroMem network acknowledging when it is uncertain or even ignorant rather than guessing or reporting a “closest” match which can still be quite far. This is made possible when the neurons are used as a Radial Basis Function classifier, and not as the commonly known K-Nearest Neighbor. It is this notion of ignorance and uncertainty which can trigger the intelligent decision to learn more or to have the wise recourse to another opinion. By combining multiple NeuroMem networks (or experts) trained differently on the same subject, accurate decisions can be made taking advantage of their complementarity or their domains of mutual exclusivity.

To experiment with NeuroMem networks, General Vision’s NeuroMem Knowledge Builder is a simple framework to train and test the neurons on your datasets while producing rich diagnostics. The company also offers simple APIs and tools for generic pattern recognition as well as image recognition. They all integrate a cycle accurate simulation of 8000 neurons and can also interface to a hardware NeuroMem network such as the Brilliant USB dongle (2304 neurons), the Arduino-compatible NeuroShield board (576 neurons) with expandable network capacity, and soon a cognitive SSD with high speed throughput and high network capacity. In addition to the NM500 chip, NeuroMem is available as an IP core for FPGAs from Xilinx, Altera and Lattice and also for licensing.

General Vision

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