Spotting keywords in speech through neuromorphic computing

enabling next-gen voice-controlled virtual assistance





Nowadays voice-controlled virtual assistants are commodity products; keywords "Hey Google" and "Alexa" typically trigger several devices around us. These devices, however, typically require bulky and power greedy systems that rely on cloud processing. In the TEMPO project, we explore Spiking Neural Networks (SNNs) to implement this functionality directly in the device with small footprint, small power consumption and very low latency. This technology would be a mayor step forward compared to today's products and can open a wide range of new application domains.



Digital life

The activity in the TEMPO project aims to

- explore the applicability of the neuromorphic technology "Spiking Neuronal Networks" (SNN) to this application context
- determine the gain n terms of implementation efficiency (power, footprint, latency). This requires a complete analog implementation.

This activity considered the implementation of SNNs both in FPGA and ASIC. The demonstration setup is show below.





Demonstrator partners



Infineon Technologies AG



The developed FPGA platform implementing the gesture recognition SNN is illustrated on the right

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