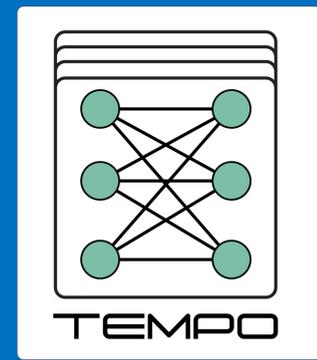


Object detection & sound localization through neuromorphic computing

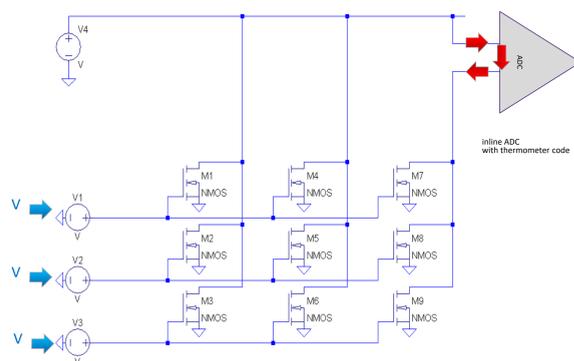
maximizing versatile and flexible in-memory processing



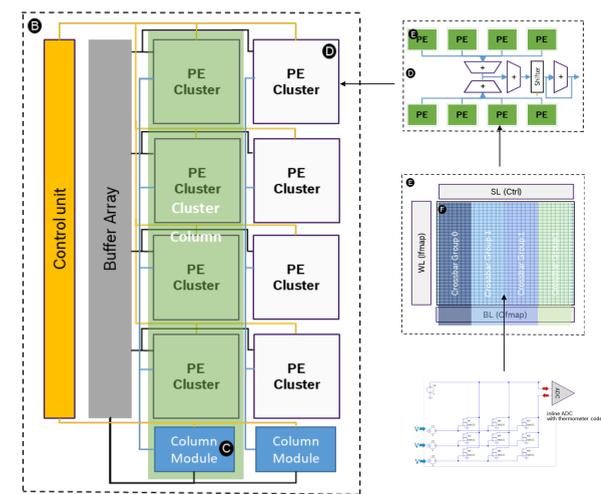
Automotive

Object detection and sound event localization are increasingly used in a diversity of applications. Hardware accelerators based in on-memory computing can offer the required data processing near the sensor. Such memories should, however, be versatile and flexible to allow trading-off speed versus precision while maintaining a very low memory footprint. This characteristic is validated for a Ferroelectric FET (FeFET) based low power mixed-signal in-memory architecture for DNN acceleration. The following technical approaches are being pursued.

Use a FeFET matrix and very low res but efficient ADCs along with bit decomposition

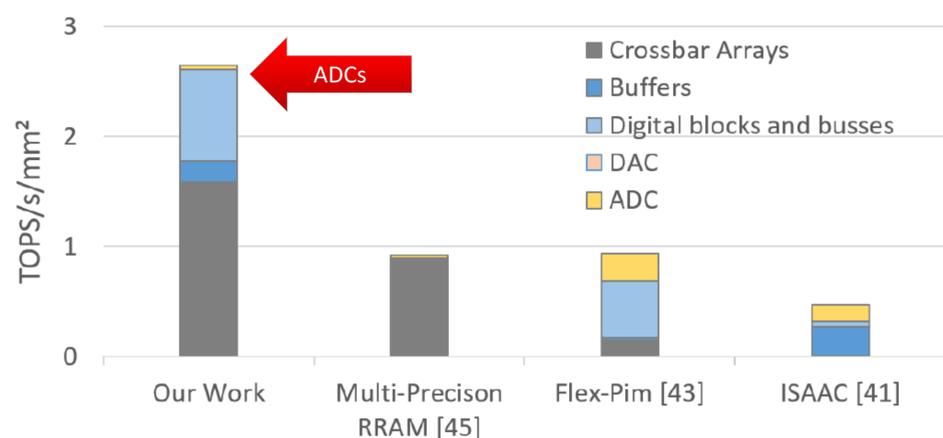


A crossbar with one ADC per column forms groups, which form processing elements, which form clusters



This work shows a very efficient ADCs and resulting system with a top performance per chip area. We published the result showing that the ADC occupies less than 2% of the chip area.

Note that the developed accelerator is independent from the selected memory technology.



Demonstrator partners



Bosch, Fraunhofer IPMS

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Technologies and hardware for neuromorphic computing

<https://tempo-ecsel.eu/>

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TEMPO

