Low-power speech detector on an FPAA

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Take away

Compute locally near the sensors.

Power consumption 153 μW.

Design is Non-volatile.

Adapt weights on chip.

Field Programmable Analog Array (FPAA)

Feature Extraction

- Band-pass Filter
- Amplitude detect
- Low-pass filter

Classifier

- One layer VMM WTA

Applications

- Remote Sensory Node
- Command-Word Recognition
- Double-Talk Detection

Performance with Noise

- Voltage (V)
- Time (s)
- SNR (dB)
- Accuracy (%)

WTA Detection

- Voltage (V)
- Time (s)
- Output Response

Vector Matrix Multiplication (VMM)

Takeaway

Non-volatile

Adapt weightson chip.