

QuickAI HW/SW Platform

Artificial Intelligence (AI) and Cognitive Sensing at the Endpoint



The new QuickAI™ platform provides an all-inclusive low power solution and development environment to economically incorporate the benefits of AI in endpoint applications. It features technology, software and toolkits from General Vision, Nepes, SensiML and QuickLogic, all of which have formed a tightly-coupled platform to solve the challenges associated with the implementation of AI for endpoint applications.

Benefits

A Complete AI System Platform

- Sensor Processing
- eFPGA for Feature Extraction
- Neurons for AI Computing
- Data Analytics SW for Data Training and Model/Classifier Building

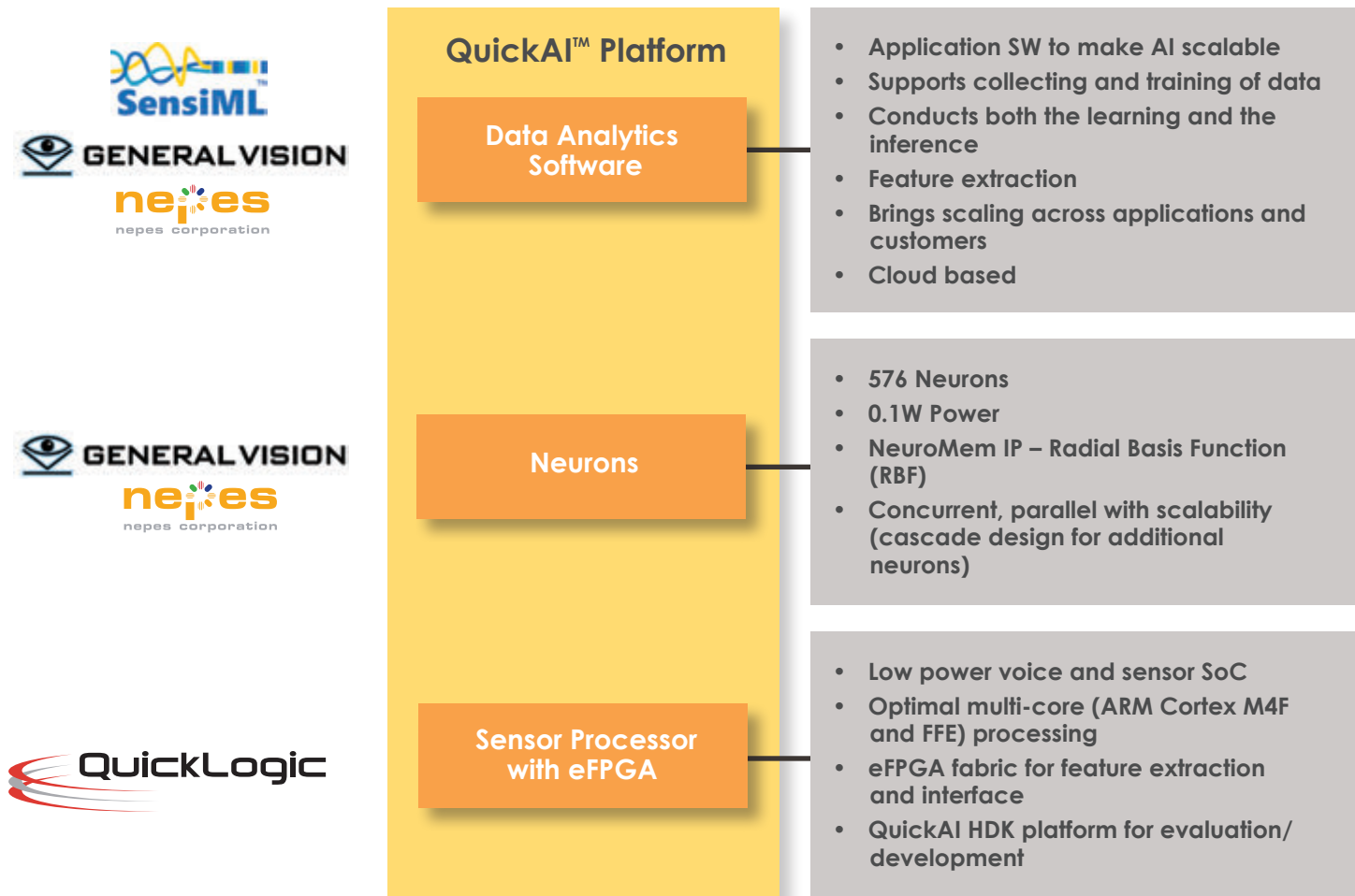
Delivers an AI Module Solution That Can be Deployed at the Endpoint Devices with Different Connectivity, Sensor and Camera Options.

Target Applications

- Industrial IoT
- Predictive Maintenance
- Vision Inspection

Addressing the Challenges of Endpoint Applications

- Companies operating at the end point don't know how to make use of big data, the cloud or AI
- Lack of data science and data modeling know-how
- Diversity of different applications and use cases makes defining model and algorithms for every use case difficult to buy off the shelf
- Development cost and complexity of managing deployed models on distributed devices



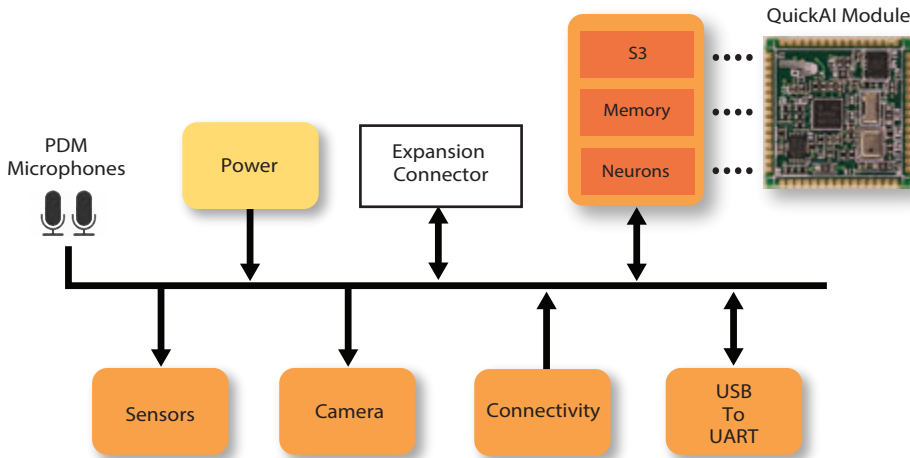
General Vision – The NeuroMem neural network IP enables on-chip exact and fuzzy pattern matching and learning using a scalable parallel architecture of Radial Basis Function neurons.

Nepes – The NM500 implements the NeuroMem technology in an energy efficient, small form factor component. It can be trained in the field to recognize patterns in real time, and multiple devices can be chained to provide any number of neurons. The Knowledge Studio software tool can be used to configure and train the neurons in the NM500 device.

SensiML – The analytics toolkit quickly and easily trains the data, builds the module & classifier and programs the EOS S3 for endpoint AI.

Quicklogic – The EOS™ S3 voice and sensor processing platform make it the ideal host SoC for the NM500. It can implement an interface for the NM500, sample the IoT sensor data, and extract features using its embedded FPGA technology.

QuickAI Module HDK Platform

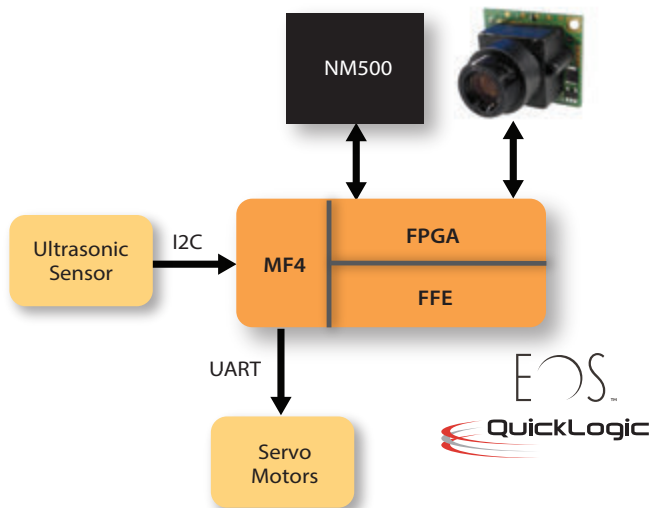


Features

- Quick AI Module ready for deployment
- HDK Platform that can be used for evaluation and/or deployment
- Enables AI (data collection, feature extraction, classifier) with motion, acoustic and image processing
- Expandable for more NM500s

QuickAI Applications

Vision Inspection for Fruit/Vegetable Harvesting



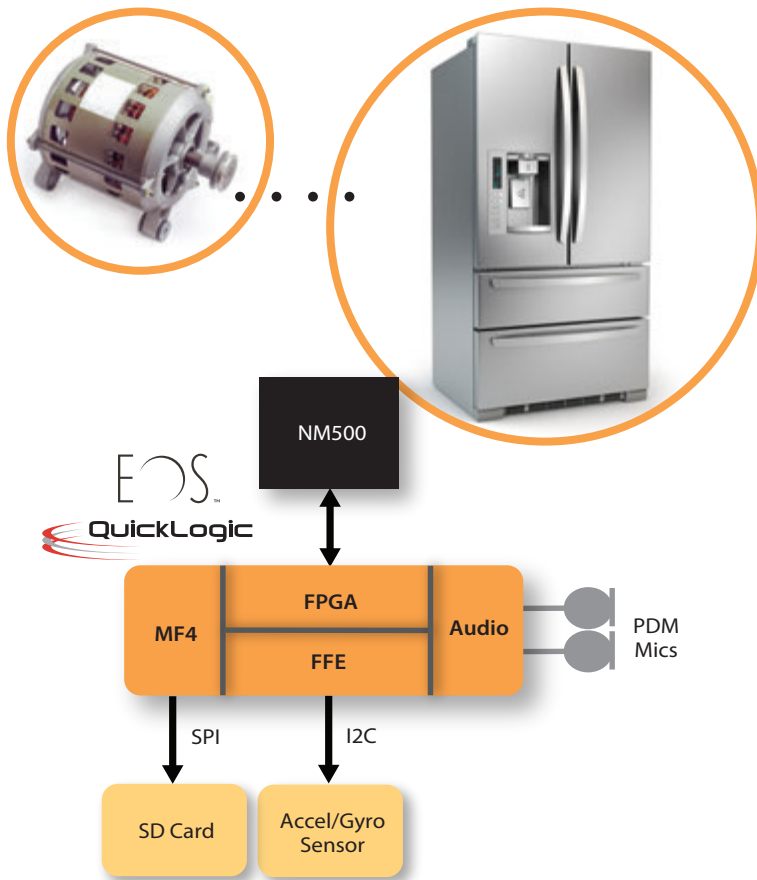
Features

- Identify ripe fruit/vegetable from unripe fruit/vegetable
- QuickAI HDK Platform (with camera interface) can be used for evaluation and/or deployment
- HDK using UART interface to drive servo motors

FPGA Features

- Sensor Data → Feature Extraction → Vector
- Interface to neurons and camera

Industrial Predictive Maintenance



Challenges

- Unique model doesn't scale across similar motor applications
- Pattern recognition and classification in real-time

FPGA Features

- Sensor Data → Feature Extraction → Vector
- FFT, FIR, MFCC, etc. feature extraction
- Interface to neurons

Sensor Enabled Features

- Vibration (Accel/Gyro) analysis at 10kHz ODR
- Audio signature analysis at 10kHz ODR

FFE Enabled Features

- Event trigger (segmentation)
- Feature extraction for simpler features
- Ultra-low power AON function accelerator



About QuickLogic: QuickLogic Corporation (NASDAQ: QUIK) enables OEMs to maximize battery life for highly differentiated, immersive user experiences with Smartphone, Wearable, Hearable and IoT devices. QuickLogic delivers these benefits through industry leading ultra-low power customer programmable SoC semiconductor solutions, embedded software, and algorithm solutions for always-on voice and sensor processing. The company's embedded FPGA initiative also enables SoC designers to easily implement post production changes, and increase revenue by providing hardware programmability to their end customers. For more information about QuickLogic, please visit www.quicklogic.com.

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