iWave
Embedding Intelligence

Corazon-AI Gen2
EdgeAI Platform

Corazon-AI Gen2 is the next-generation intelligent device with exceptional computing power to process AI data and algorithms on the edge. It gives high-performance and power efficiency in an embedded AI computing module. It can runs multiple neural networks in parallel to deploy wide range of industrial and machine applications.

Value Proposition

- Hardware accelerated pre-processing and post processing
- Video Analytics & Real-time decision-making on the Edge
- Deployment ready AI hardware and AI applications
- Heterogeneous ARM + FPGA Architecture
- Custom Solution on the requirement

- Multi-Camera Support - 8 IP up to 1080p, 2 USB3.0, SDI & LiDAR*
- Rapid integration and faster time to market for AI Edge Solutions
- Connectivity Options: Ethernet, Wi-Fi, Bluetooth 5.0, 3G/4G
- Low Latency and power efficient
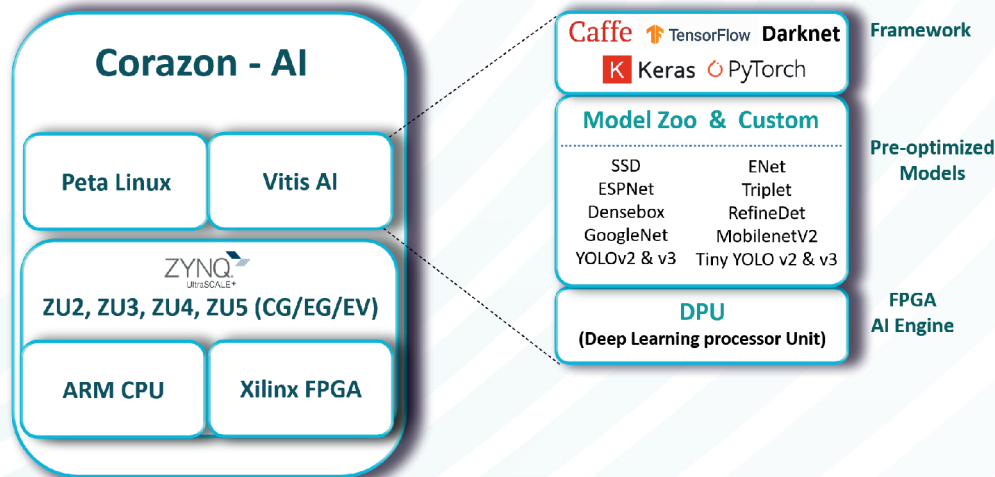- 10+ Year Availability

Specifications

Hardware

CPU & GPU

Quad-core Arm Cortex-A53 Based Application Processing Unit (APU) Up to 1.5GHz
Dual-core Arm Cortex-R5 Real-Time Processing Unit (RPU) Up to 600MHz
ARM MALI - 400MP2 up to 677 MHz

Memory

64bit, 4GB DDR4 with ECC for PS (Upgradable up to 8GB)
32bit, 2GB DDR4 for PL (Upgradable up to 4GB)

Storage

8GB eMMC Flash (Expandable to 256GB)
EEPROM for MAC Address Secure Key
M.2 SATA extended storage for recording
USB3.0 x 2

Connectivity & Cameras Supported

Wi-Fi 802.11 b/g/n/ac, BLE 5.0, Gigabit Ethernet x 2, CAN x 2
Cameras: RTSP(IP) x 8, USB x 2, 3G-SDI x 1, LiDAR

Display & IO's

4K Display Port Display with Audio
SPI x 1, CAN x 2, I2C x 1, GPIO header

In-built FPGA Modules

AI Engine

Dual Core DPU 4096 @330MHz for ~2704 GOPs
DPU 4096 @330MHz for ~1352 GOPs

Encode/Decode

H.264/H.265
16x 1080p @30fps
8x 1080p @ 30fps
4x 1080p @ 60fps
32x 480p @ 30fps
JPEG, MJPEG*

Software

Embedded Linux

Petalinux Package integrated with Yocto
Linux Kernel 5.4.xx
Vision Library for Hardware Acceleration*

Vitis AI Stack

Caffe | TensorFlow | PyTorch | Darknet | Keras

Packages Integrated

FFMPEG | gstreamer | Qt | JSON | OpenCV | OpenSSH | SFTP | NumPy | python | PostgreSQL

Cloud Integrated

aws | Azure | IBM Cloud

Automotive Standard

SAE J1939*

Robotics Standard

ROS*

General Features

Environment Specification & Compliance

REACH, ROHS & CE*

Enclosure Dimension & Form Factor

118.6mm x 97.3mm x 46.8mm (Enclosure with connector part)
110mm x 90mm (Form Factor)
118.6mm x 97.3mm x 46.8mm (Passive Heat Sink Enclosure)

Power Input & Operating Temperature

12V, 5A AC Adaptor
16x 1080p @30fps
0°C to +100°C (Extended), -40°C to +70°C (Industrial)
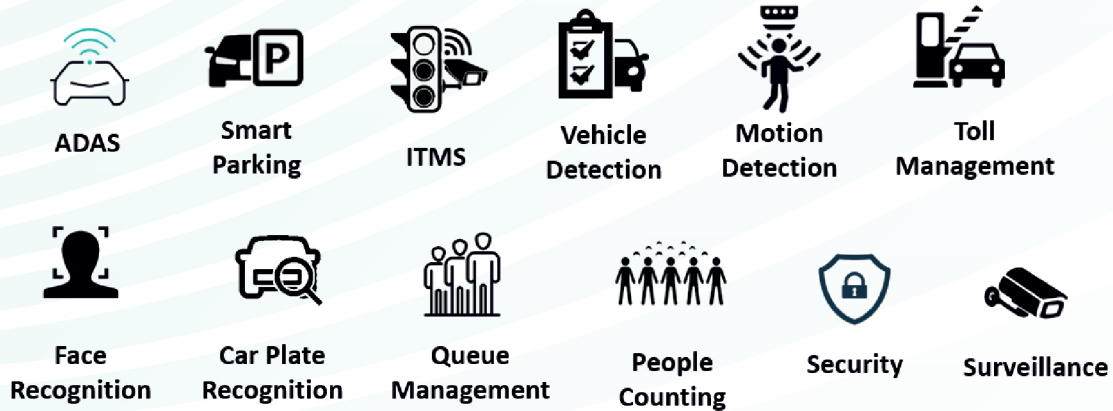
* In Progress

AI Inference on Corazon-AI

The Corazon-AI integrated with FPGA AI engine (DPU) & Xilinx Vitis AI Stack which enables faster time to market while reducing complexity. The DPU is an AI inference engine dedicated to the CNN & provides scalable multi-dimensional parallel architecture capable of performing major convolutional calculations, batch normalisation through deep pipelined computing engines. DPU provides configurable options between B3136 and B4096.

The Xilinx Vitis AI Stack enables developers to accelerate the development flow of AI applications even without in depth knowledge of FPGA and deep learning. The Stack support C++/python API's which provides the programming flexibility to the developers. The Xilinx AI Stack includes advanced pre-optimized deep learning models from the mainstream frameworks such as Tensor-flow, Caffe, Darknet, PyTorch and Keras.

Corazon - AI

| Peta Linux | Vitis AI |

ZYNQ UltraSCALE+
ZU2, ZU3, ZU4, ZU5 (CG/EG/EV)

| ARM CPU | Xilinx FPGA |

Framework
Caffe | TensorFlow | Darknet
Keras | PyTorch

Model Zoo & Custom — Pre-optimized Models

SSD	ENet
ESPNet	Triplet
Densebox	RefineDet
GoogleNet	MobilenetV2
YOLOv2 & v3	Tiny YOLO v2 & v3

DPU
(Deep Learning processor Unit) — FPGA AI Engine

Smart City & Video Analytics Applications

- ADAS
- Smart Parking
- ITMS
- Vehicle Detection
- Motion Detection
- Toll Management
- Face Recognition
- Car Plate Recognition
- Queue Management
- People Counting
- Security
- Surveillance

iWave Systems brings over 20+ years of valuable experience in high-performance FPGA based design and development, offering an extensive portfolio of standard/custom System On Modules, SBC based on Zynq & Zynq MPSoC SoC devices and comprehensive Engineering design services involving embedded hardware, FPGA, and software development in servicing to multiple domains across the globe such as Industrial, Medical, Automotive, IoT and Computer Vision. To complement, iWave Systems also offers an extensive suite of FPGA based IP Cores such as ARINC818 Complete Suite, Storage, Legacy Processors and Video Processing Ips. We also build Edge AI solutions targeted towards industrial and smart city AI applications.

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Corazon AI Gen 2
The device can be ordered online from the iWave Website
https://www.iwavesystems.com/product/corazon-ai-edge-ai-platform/
Or from our Local Partners in your region
http://www.iwavesystems.com/about-us/business-partner.html