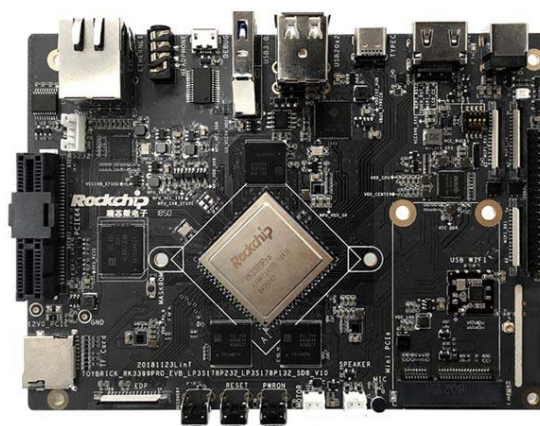# Toybrick RK3399Pro AI Development Kit 3G+16GB

SKU 110110064

RK3399Pro AI Development Kit

NPU inside for Artificial intelligence deep learning

Support TensorFlow / Caffe / Mxnet
Support 8bit/16bit operation Up to 3.0TOPs

Description

The TB-RK3399Pro development board is equipped with the super-performance AI processor RK3399Pro, which has superior general-purpose computing performance. It equips ARM big.LITTLE architecture, dual-core Cortex-A72 + quad-core Cortex-A53, with technical leadership in overall performance and power consumption; quad-core ARM high-end GPU Mali-T860, integrates multiple bandwidth compression technology, providing overall excellent performance. Its on-chip NPU (Neural Network Processor) offers up to 3.0TOPs computing power.
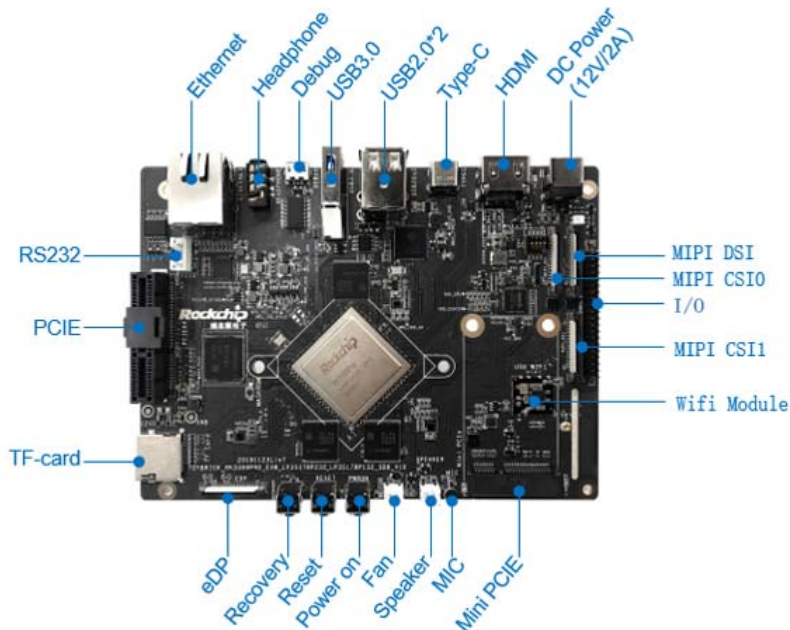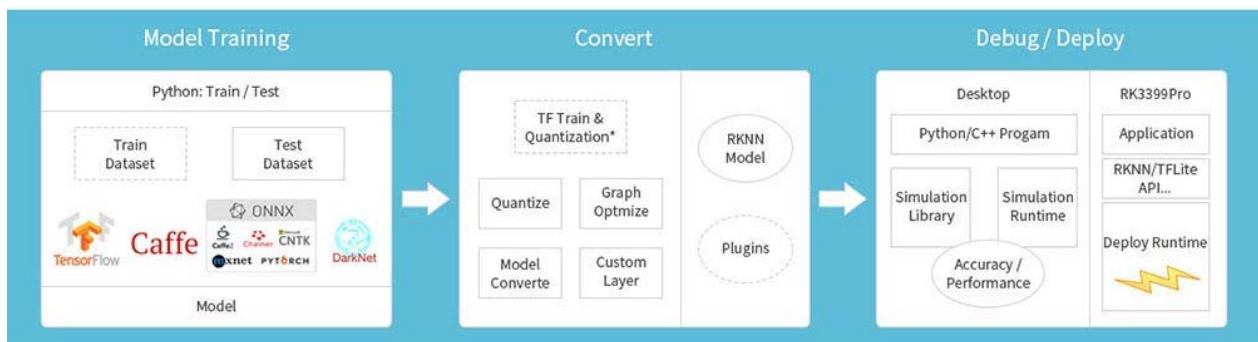

The TB-RK3399Pro development board has rich external interfaces, including 4 lanes PCIE and Mini PCIE, dual high-speed USB3.0 port Type-C + USB3.0 Type-A, dual MIPI CSI and dual ISP with pixel processing capability up to 1300W pixels, and HDMI2.1, DP1.2, MIPI-DSI and EDP; it also supports 8-channel digital microphone array input.
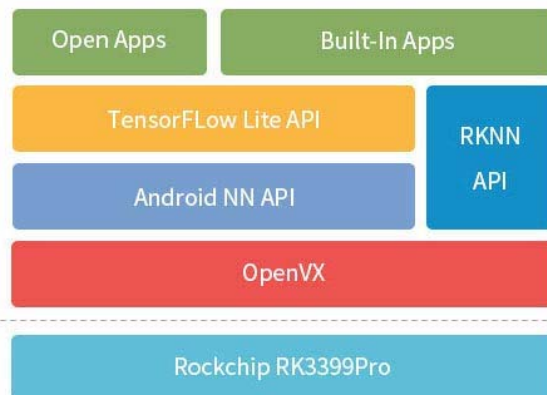
Support Android & Linux Dual System

Develop Tool for AI

Model Training	Convert	Debug / Deploy

Model Training
Python: Train / Test

Train Dataset

Test Dataset

ONNX

TensorFlow Caffe Caffe2 Chainer CNTK mxnet PYTORCH DarkNet

Model

Convert
TF Train & Quantization*

Quantize

Graph Optmize

Model Converte

Custom Layer

RKNN Model

Plugins

Debug / Deploy
Desktop

Python/C++ Progam

Simulation Library

Simulation Runtime

Accuracy / Performance

RK3399Pro

Application

RKNN/TFLite API...

Deploy Runtime

AI Application Programming Interface

- Support **Android NN** API

- Offer **RKNN** Cross-Platform API

- Linux support **TensorFlow**

- Rich **API** Examples

Open Apps	Built-In Apps

TensorFLow Lite API

Android NN API

RKNN API

OpenVX

Rockchip RK3399Pro

FLexible Software Stack

On the software side, TB-RK3399Pro is pre-installed Android and Linux system, support dual system boot and one-button OS switching. integrated rich AI application development components, providing friendly and concise application programming interface, seamless docking NPU to achieve AI computing hardware acceleration, support Various model inferences such as TensorFlow/TensorFlow lite/Caffe.

Specification

SoC: Rockchip RK3399Pro (NPU built-in)
NPU: Support 8-bit/16-bit Inference
Deep Learning: Support TensorFlow/Caffe Model
CPU: Dual Cortex-A72 +Quad Cortex-A53,64-bit CPU
Frequency: up to 1.8GHz
GPU: Mali-T860MP4 GPU
Memory: 3GB LPDDR3
EMMC: 16GB eMMC
Support: SIM Card, TF Card
USB: 2 x USB 2.0 Host, 1 x USB 3.0 Host, 1 x USB 3.0 Type-C
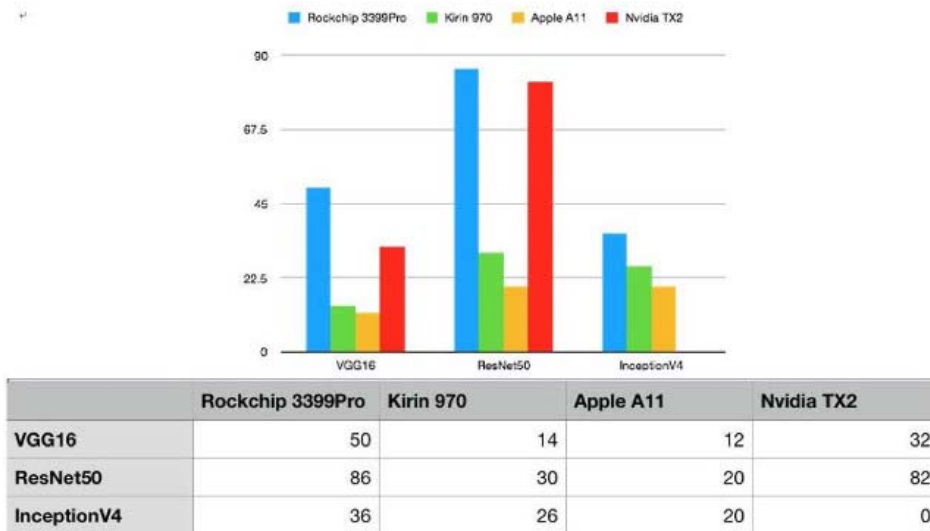Dual OS: Android 8.0 & Fedora 28

RK3399Pro

Dual-core Cortex-A72 up to 1.8GHz; Quad-core Cortex-A53 up to 1.4GHz
NPU up to 3.0TOPS
Mali-T860MP4 GPU
Dual-channel DDR3/DDR3L/LPDDR3/LPDDR4
4K UHD H265/H264/VP9
HDR10/HLG
H264 encoder
Dual MIPI CSI and ISP
USB Type-C and USB 2.0

CPU	Big.Little architecture: Dual Cortex-A72 + Quad Cortex-A53, 64-bit CPU
	Frequency is up to 1.8GHz
NPU	Support 8-bit/16-bit Inference
	Support TensorFlow/Caffe Model
GPU	Mali-T860MP4 GPU, OpenGL ES1.1/2.0/3.0/3.1, OpenVG1.1, OpenCL, DX11
	Supports AFBC (ARM Frame Buffer Compression)
Memory	3GB/6GB LPDDR3
	Support eMMC 5.1 with HS400, SDIO 3.0 with HS200
Multi-Media	4K VP9 and 4K 10bits H265/H264 video decoders, up to 60fps
	1080P other video decoders (VC-1, MPEG-1/2/4, VP8)
	1080P video encoders for H.264 and VP8
	Video post processor: de-interlace, de-noise, enhancement for edge/detail/color
Display	Dual VOP: one supports 4096x2160 with AFBC supported; the other supports 2560x1600
	Dual channel MIPI-DSI (4 lanes per channel)
	eDP 1.3 (4 lanes with 10.8Gbps) to support display, with PSR
	HDMI 2.0 for 4K 60Hz with HDCP 1.4/2.2
	DisplayPort 1.2 (4 lanes, up to 4K 60Hz)
	Supports Rec.2020 and conversion to Rec.709
Interface	Dual 13M ISP and dual channel MIPI CSI-2 receive interface
	USB 3.0 with type-C supported
	PCIe 2.1 (4 full-duplex lanes)

Embedded low power MCU for other application	
8 channels I2S supports 8 channels RX or 8 channels TX	

	Rockchip 3399Pro	Kirin 970	Apple A11	Nvidia TX2
VGG16	50	14	12	32
ResNet50	86	30	20	82
InceptionV4	36	26	20	0

Shipping list:
1 x TB-RK3399Pro development board with Heatsink (3G+16G eMMC)
1 x Acrylic case with screws
1 x 12V-2A power supply
1 x Type C cable

ECCN/HTS

ECCN	5A002.a.1
HSCODE	