JetStream

AI video carrier board for NVIDIA® Jetson Xavier™ NX

Advanced Micro Peripherals
THE EMBEDDED VIDEO EXPERTS

The JetStream is a multi-channel video AI carrier board for Jetson™ modules. The JetStream provides dual HDMI and eight composite video inputs allowing multi-channel video AI applications to be rapidly developed and deployed. This SWaP optimized solution is ideal for demanding applications in Military, Communications, Transportation, Mining and Energy industries.

AI Inference example: Object detection + monitoring(1)

The JetStream features dual HDMI/DVI inputs at up to 1080p60 and an 8 channel NTSC/PAL/RS-170 low latency video capture engine. All inputs can be simultaneously captured for processing by the Jetson Xavier NX module allowing vision-enabled AI applications to use a wide range of standard video sources. An optional MIPI expansion module provides expansion to other video interface types on request. The JetStream has a HDMI output for local display and Gigabit Ethernet for connectivity. An M.2 (Key M) slot is provided to allow connection of high-performance NVMe storage. Additional expansion is possible via the PCIe/104 OneBank™ bus connector.

The JetStream is a standard PCIe/104 form factor card and is powered from 9V-15V DC input. The JetStream is supported by a comprehensive board support package and a series of application notes designed to help rapid development of vision-enabled AI applications.

Multi-channel

vision-enabled

AI

Device edge

computing

Rev A.02
Subject to change without notification

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PC/104
Embedded PC Modules

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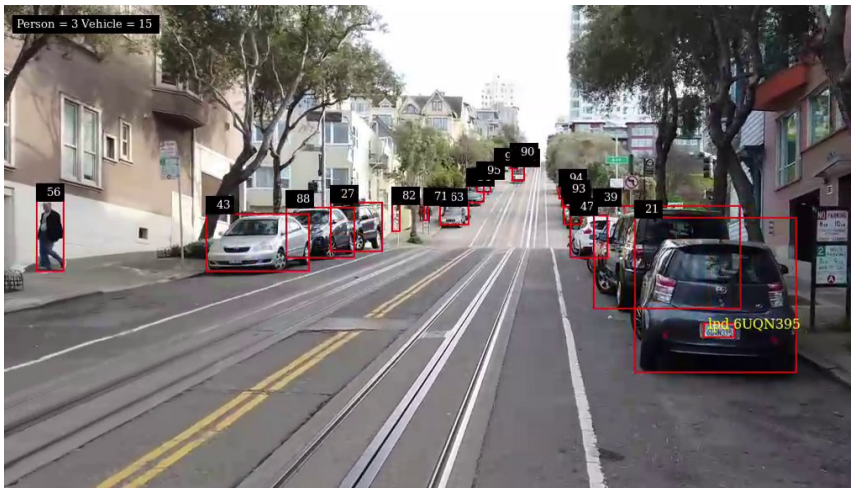

AI Inference example: Object detection + ANPR

Dual HDMI +

8x NTSC/PAL

video inputs

AI

video analysis,

encode and stream

Applications

AI Inference - Object Recognition, ANPR, Pose detection

Device Edge computing

Unmanned vehicles (UAV, ROV)

All-round Real-Time Situational Awareness

Traffic Monitoring and Control

Video Acquisition and Analytics

Remote Video Surveillance

Rugged intelligent video recorders for marine, aviation

Border Security

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SWaP optimized for applications in the Military, Transportation, Mining and Energy Industries

Features

Support for NVIDIA® Jetson Xavier™ NX and Nano modules

2x HDMI video inputs at up to 1080p60

8x Composite PAL/NTSC/RS-170 video inputs

HDMI 2.0 Display at up to 4K resolution

Multi-channel AI Video Inference

H.264/H.265 Video Encoding and Streaming

Rugged, real-time video capture/analyze/stream solution

M.2 (Key M) NVMe storage

Gigabit Ethernet

PCIe/104 OneBank™ Expansion

Industry Standard PC/104 mechanical form factor

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PC/104
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JetStream

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AI video carrier board for NVIDIA® Jetson Xavier™ NX

Technical Specification

Jetson Module Support

NVIDIA® Jetson Xavier™ NX
- **AI Performance:** 21TOPS
- **GPU:** 384-core NVIDIA Volta™ GPU with 48 Tensor Cores
- **CPU:** 6-core NVIDIA Carmel ARM® v8.2 64bit
- **Memory:** 8GB 128-bitLPDDR4x
- **Storage:** 16GB eMMC 5.1

NVIDIA® Jetson Nano (option)

Digital Video Inputs

Dual HDMI input at up to 1080p60 (SMPTE 292M, SMPTE 424M)
MIPI CSI expansion module (option)
- Additional video input types: HD-TVI, HD-SDI. Others by request.

Analog Video Inputs

8x Composite PAL/NTSC/RS-170 video inputs

Video Codec

ITU-T H.264 (ISO/IEC 14496-10)
ITU-T H.265 (ISO/IEC 23008-2)
Encode all inputs at full frame rate

Display

HDMI 2.0 up to 4K
Audio output via HDMI

Network Interface

Gigabit Ethernet for RTSP/RTP streaming and control

Data Storage

M.2 (Key M) slot for NVMe
microSD-Card

Expansion busses

Stackable PCIe/104 OneBank™ connector
- 4x PCI Express x1 Lanes Gen 2.0

M.2 (Key M) PCIe 1x4 Gen 4.0 (NVMe)

I/O Expansion

2x USB 2.0
1x RS232
1x USB Debug (serial console)
1x USB Device

Power

9V to 15V DC input

Environmental

Operating temp -40˚C to +85˚C (carrier board)

Mechanical

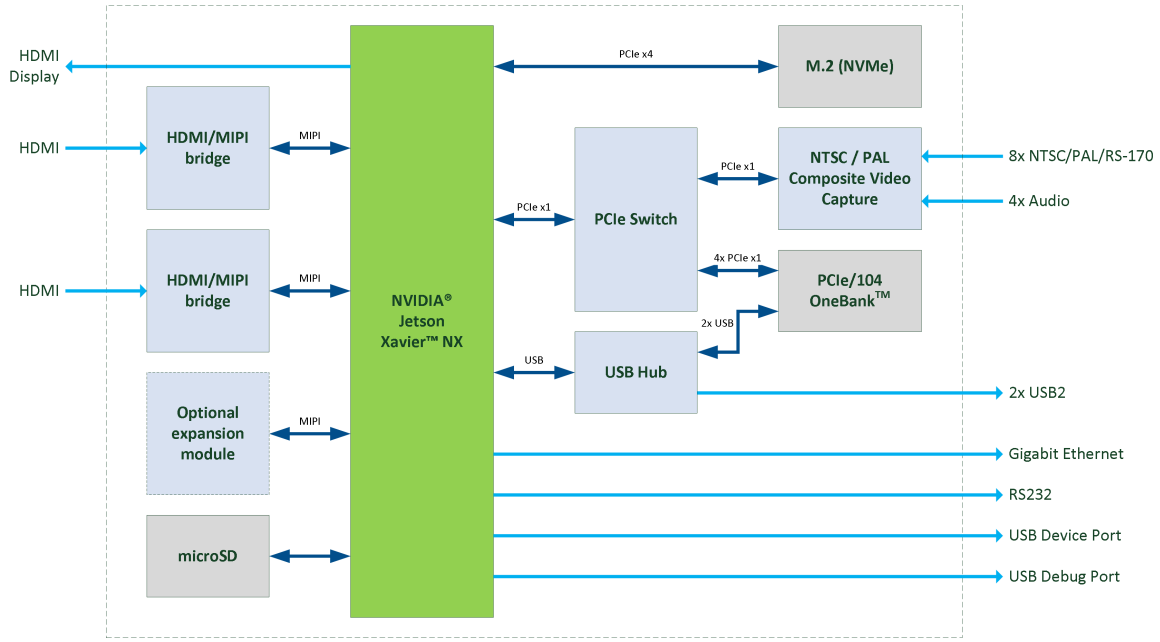
Standard 4.55 x 3.775in PC/104 form factor
Mechanical mounting for PC/104 stack

Software

Support for Ubuntu Linux 18.04
Board support package
Application notes:
- AI Video analytics
- Video encoding and Streaming

Ordering Information

JetStream-Xavier-EXT
- JetStream + NVIDIA® Jetson Xaivier™ NX module



JetStream Functional Diagram

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(1) Northern Border Remote Video Surveillance System (NBRVSS) Source: www.cbp.gov Photo: Heath Stephens

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