



# Multi-camera system and Image processing for UAV and embedded applications

# Multi-camera comprehensive system

Our expertise is to implement disruptive low-level technologies in ready-to-use systems

## Components of the system

- Up to four diversified XIMEA industrial cameras
- NVIDIA Jetson TX1/TX2 module with carrier board
- Fastvideo SDK for high-performance imaging on CUDA
- MRTech proprietary full image processing pipelines

## Features

- ✓ High-performance, low-power, small, light, multi-camera system
- ✓ Image pre-processing, disk storage, video encoding, streaming, etc.
- ✓ Small implementation time



source: SKAT Systems [www.skat.systems](http://www.skat.systems)

## Innovative XIMEA industrial cameras and technologies compatible with the system

- up to four diversified XIMEA industrial cameras
- colour, monochrome, IR-extended cameras
- compact CMOS cameras - from 2.3 MPix (165 fps) to 12 MPix (31 fps)
- high-performance PCIe cameras - from 12 MPix (130 fps) to 50 MPix (30 fps)
- high-speed cameras - from 1.1 MPix (3500 fps) to 16 MPix (300 fps)
- scientific CCD, sCMOS, X-Ray, hyperspectral (HSI) cameras etc.



### Camera interfaces

- ✓ USB3 and USB 3.1
- ✓ PCIe Gen2/Gen3, x2-x8



source: XIMEA [www.ximea.com](http://www.ximea.com)

# NVIDIA Jetson TX1 / TX2 module

## NVIDIA Jetson Tegra X1/X2 supercomputer module

- Revolutionary NVIDIA Maxwell™ or Pascal™ architectures
- Jetson TX1 – 256 CUDA cores, Quad ARM® A57/2 CPU
- Jetson TX2 – 256 CUDA cores, Dual Denver Quad ARM® A57/2 CPU



## Specialized TX1/TX2 carrier board

- designed by XIMEA xiLab
- 10/100/1000 Ethernet
- WiFi - IEEE 802.11ac (800Mbps)
- Bluetooth 4.0 (24 Mbps)
- 2x USB 3.0 port for FFC/FPC cable
- 2x PCIe Gen2 x2 ports for FFC/FPC cable
- GPIO



source: XIMEA [www.ximea.com](http://www.ximea.com)

## Fastvideo SDK for high performance Image Processing on GPU

That SDK is a set of separate components which correspond to standard image processing pipeline for camera applications such as demosaicing, denoising, resizing, sharpening, color correction, 1D and 3D LUTs, JPEG and JPEG2000 compression, etc.



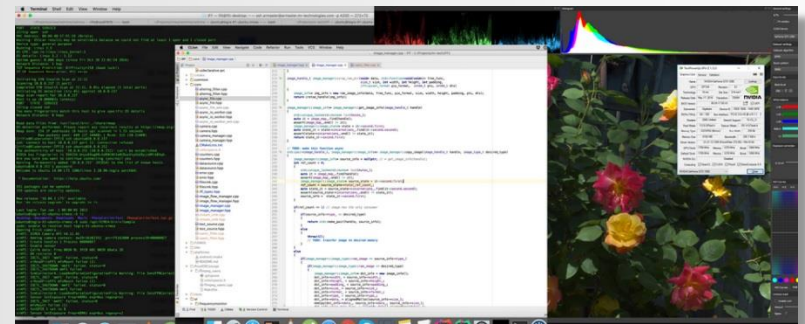
See more at <http://www.fastcompression.com/products/sdk/sdk.htm>

## MRTech universal Image Flow software

MRTech Image Flow is a cross-platform software for building full image processing pipelines in machine vision systems. MREch company offers the service to implement and customize integrated software solutions for the represented platform.

More information at

<https://mr-technologies.com/image-flow-framework/>



# DRONE 2017 exhibits

## Case 1.

### Hardware

- Three xiC/xiX XIMEA cameras
- 3.1 MPix (122 fps) each
- NVIDIA Jetson TX2 module with carrier



### Image processing

- 3x 3.1 MPix (up to 75 fps) images acquisition, black level, white balance, demosaicing
- Render on the screen or H.264 encoding and streaming
- TX2 module has half of computing resources free for user application

## Case 2.

### Hardware

- 20 MPix main and 5 MPix subminiature course cameras
- NVIDIA Jetson TX1 module with carrier
- SSD 960 PRO NVMe M.2 512GB



### Image processing

- 5K image acquisition (main camera)
- Black level, white balance, demosaicing, YUV 4:2:0 conversion, SSD writing
- H.265 encoding and streaming of 4K images with 40 fps and 35 ms latency

MRTech SK s.r.o.  
Pod vinohradmi 1231/1  
95115 Mojmirovce  
Slovak Republic  
[info@mr-technologies.com](mailto:info@mr-technologies.com)  
[www.mr-technologies.com](http://www.mr-technologies.com)



XIMEA, Fastvideo, MREch SK companies are NVIDIA community members.  
MREch SK is a VAR partner of XIMEA and Fastvideo and provides overall solutions worldwide.