

IFF SDK benchmarks for NVIDIA Jetson Orin NX

High-performance image processing on Jetson and streaming to a receiving computer

Transmitting side

NVIDIA Jetson Orin NX 16GB with FullHD/4K/8K PCIe camera

'IFF SDK `farsight` application:

- acquisition from XIMEA camera
- color pre-processing on GPU:
 - black level subtraction
 - histogram calculation
 - white balance
 - demosaicing
 - color correction
 - gamma
 - image format conversion
- automatic control of exposure time and white balance
- H.265 encoding
- RTSP streaming

<https://github.com/mr-technologies/farsight>

Receiving side

MSI Raider GE77HX, NVIDIA GeForce RTX 3070Ti

'IFF SDK `imagebroker` application

- receiving of the RTSP stream
- H.265 decoding
- image export
- rendering images on the screen using OpenCV

<https://github.com/mr-technologies/imagebroker>

input image bitdepth	processing pipeline bitdepth	demosaic algorithm	FPS	encoder bitrate, Mbps	Jetson processing latency, ms	Jetson power, W	Glass-to-Glass latency, ms
MAXN power mode							
XIMEA CB654CG-GP-X8G3 camera with PCIe Gen 3 interface							
Full HD (1920 x 1080)							
1 ms exposure time							
8-bit	8-bit	HQLI	320	20	7	20	25
8-bit	8-bit	DFPD	320	20	8	21	25
12-bit	16-bit	HQLI	260	20	14	25	30
12-bit	16-bit	L7	250	20	14	25	30
12-bit	16-bit	DFPD	230	20	15	25	30
12-bit	16-bit	MG	180	20	19	24	35
XIMEA CB654CG-GP-X8G3 camera with PCIe Gen 3 interface							
4K UHDTV (3840 x 2160)							
3 ms exposure time							
8-bit	8-bit	HQLI	80	20	24	20	50
8-bit	8-bit	DFPD	80	20	25	20	50
12-bit	16-bit	HQLI	70	20	37	25	55
12-bit	16-bit	L7	70	20	37	25	55
12-bit	16-bit	DFPD	65	20	40	25	60
12-bit	16-bit	MG	50	20	50	25	80
XIMEA CB654CG-GP-X8G3 camera with PCIe Gen 3 interface							
8K UHD (7680 x 4320)							
3 ms exposure time							
8-bit	8-bit	HQLI	20	20	85	20	150
8-bit	8-bit	DFPD	20	20	91	20	150
12-bit	16-bit	HQLI	17	20	120	25	175
12-bit	16-bit	L7	17	20	122	25	175
12-bit	16-bit	DFPD	17	20	136	26	175
12-bit	16-bit	MG	10	20	171	23	300