

MRTech IFF SDK for Machine Vision

- Image acquisition from XIMEA PCIe cameras
- GPU color processing, encoding, low-latency streaming on NVIDIA Jetson

Transmitting side

- XIMEA PCIe cameras (xiX series)
- NVIDIA Jetson Orin NX
- XIMEA carrier board for Orin NX
- IFF SDK 'farsight' application

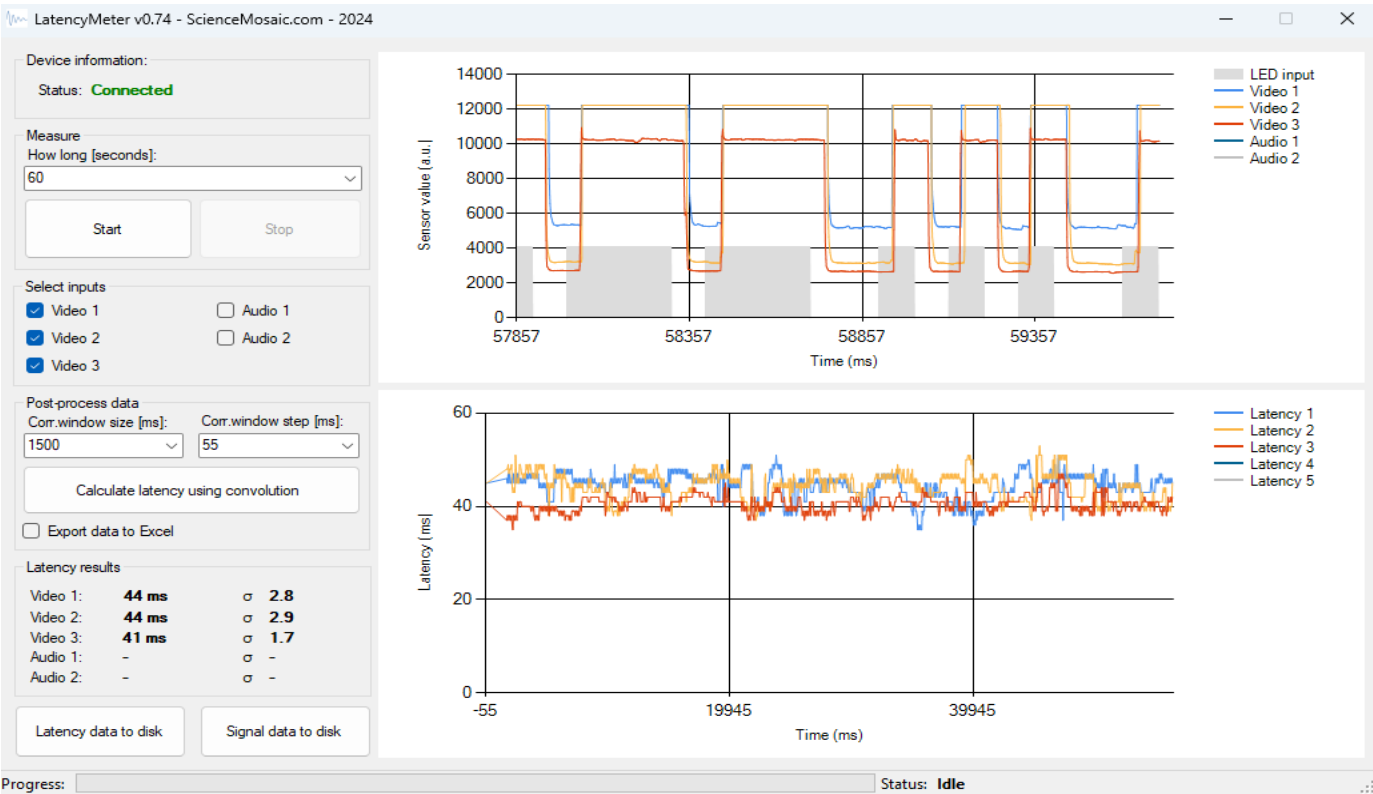
image acquisition, color pre-processing, H.265 encoding, RTSP streaming

Receiving side

- MSI laptop with NVIDIA GPU
 - display with 240 Hz refresh rate
 - Windows 11
 - IFF SDK 'imagebroker' application
- image receiving, decoding, rendering to screen

| NVIDIA Jetson | Orin NX | | | |
|------------------------------|---------------------|----------------|-----------------------|------------------------|
| XIMEA xiX/xiX-Xtreme cameras | One camera | | Two cameras | Three cameras |
| Camera interface | PCIe X4G3 | | 2x PCIe X2G2 | 3x PCIe X2G2 |
| Image size | Full HD (1920x1080) | 4K (3840x2160) | 2x 8.1 MP (2848x2848) | 3x Full HD (1920x1080) |
| Input image bitdepth | 12-bit | | | |
| Image processing bitdepth | 16-bit | | | |
| Exposure time | 1 ms | | | |
| Frame rate | 390 FPS | 109 FPS | 2x 55 FPS | 3x 120 FPS |
| Encoder bitrate | 20 Mbps | 10 Mbps | 2x 10 Mbps | 3x 10 Mbps |
| Jetson processing time | 9 ms | 24 ms | 35 ms | 13 ms |
| Jetson power mode | MAXN Super | | | |
| Camera+Jetson power budget | 41 W | 42 W | 37 W | 38 W |
| Glass-to-Glass latency | 28 ms | 50 ms | 69 ms | 43 ms * |

* Glass-to-glass latency measurement: Three Full HD streams with Orin NX



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Transmitting side

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- NVIDIA Jetson AGX Orin

- Forge carrier board for AGX Orin from Connect Tech

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- image acquisition, color pre-processing, encoding, streaming

Receiving side

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| Image size | Full HD (1920x1080) | 4K (3840x2160) | 2x 8.1 MP (2848x2848) |
| Input image bitdepth | 12-bit | | |
| Image processing bitdepth | 16-bit | | |
| Exposure time | 1 ms | | |
| Frame rate (for each camera) | 390 FPS | 140 FPS | 2x 60 FPS |
| Encoder bitrate | 20 Mbps | 10 Mbps | 2x 10 Mbps |
| Jetson processing time | 5.7 ms | 16.6 ms | 25 ms |
| Jetson power mode | MAXN | | |
| Camera+Jetson power budget | 44 W | 51 W | 50 W |
| Glass-to-Glass latency | 24 ms | 42 ms | 68 ms ** |

** Glass-to-glass latency measurement: Two streams of 8.1 MP images with AGX Orin

