TICO-RAW

IP-cores & SDK

Unleash image sensor dataflows

Engineered at intoPIX, TICO-RAW is an innovative, visually lossless, low-power, low-memory and line-based image processing and compression technology specifically created to unleash image sensor dataflows.

Thanks to its innovative processing and coding, the full power of the image sensor is preserved while reducing the bandwidth and storage needs. It offers high image quality and the capability to manage high resolution, high frame rate and high dynamic range workflows. TICO-RAW is the world's first codec that can offer compression efficiency with such low complexity.

TICO-RAW is a perfect solution for augmented reality, automotive (ADAS), professional and consumer cameras, drones or mobiles devices. The technology is extremely low-power and tiny in ASIC or FPGA, fast and powerful in CPU or GPU, and suitable for latency-critical environments.

Technology benefits

> High quality visually lossless RAW:
- Supports image sensors up to 16bit
- Compresses down to 1bit per pixel

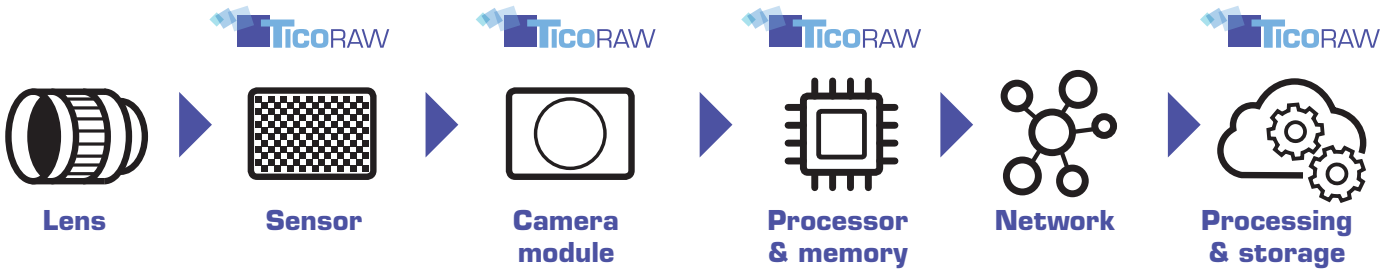
> From 1 megapixel to 100 megapixels
- Includes embedded proxy decoding mode

> FPGA & ASIC IP-cores
- Extremely low resource usage, low-memory, low-power
- Microsecond line-based latency

> Developer SDK for CPU & GPU
- Powerful, real-time or faster than real-time

Where can TICO-RAW be implemented?

Wherever you need it as hardware IP-core or software!



- Reduce the power. Process and manage more pixels from the sensor.
- Support higher resolution, high frame rate and high dynamic range easily.
- Reduce the bandwidth of memory in the image processing pipeline between RAW data and display data.
- Reduce the bandwidth during real-time transmission over network infrastructures without affecting the latency.
- Efficiently decrease the stored RAW image data on the storage media (or get the same size as JPEG but with the full flexibility of RAW).
- Increase the decoding speed while retaining the sensor data needed for a complete control of the RAW processing pipeline.

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Specifications and implementations

		TICO-RAW ENCODER & DECODER
IMAGE	Color format	RGGB, RAW (CFA-BAYER)
	Bit depth	8 / 10 / 12 / 16 bits per component
	Resolution	Any up to 10.240 x 10.240 pixels
	Frame rates	Any (depending on ASIC / FPGA IP-core or Developer SDK configuration)
PROCESSING	Quality Rate control Latency	Near-lossless / Visually lossless / Lossy down to 1bpp CBR (constant bit rate) operation - Adjustable down to 1bpp (~10:1) (Sub) Intra-frame: down to 0.1 millisecond
	Proxy mode	Downscaler in TICO-RAW decoder for fast analysis, proxy viewing & editing

		IP-cores (Q2 2019)	SDK (Q2 2019)
IMPLEMENTATION	Evaluation	Ref software available	Ref software available
	Platform	FPGA: Xilinx & Intel ASIC like TSMC 12, 16, 28, 40 nm	GPU: Nvidia, AMD, Intel CPU: x86 Intel
	Low complexity & fast processing	Small footprint, ultra low memory & low-power (no ext DDR) Various configurations	Highly parallelized GPU SDK processing Intel compatible CPU SDK (SSE 4.1 or newer)
	Real-time operation	Line-based latency (< 1 millisecond)	< 1 frame

IP-core releases

	VIDEO FORMATS						
REFERENCE IP-CORES ENCODER-DECODER	Max width	Max FPS	Color sampling	Bit depth	XILINX	intel	ASIC
IPX-TICO-RAW-UHD4K-Enc or Dec	4096	120	CFA - RAW	8, 10, 12, 14, 16	✔	✔	✔
IPX-TICO-RAW-UHD8K-Enc or Dec	8192	60	CFA - RAW	8, 10, 12, 14, 16	✔	✔	✔

CONTACT INTOPIX FOR YOUR OWN CUSTOM IP-CORE & SDK CONFIGURATION

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