BitSqueeze™

High resolution cameras are being rapidly developed. Canon recently released its 120MP sensor and is developing sensors with even higher resolution. These high resolutions are impressive but for example, when military operators enter high threat situations, only usable if the latency is close to zero. High resolution cameras require specific protocols to be able to transport these enormous amounts of video data with high frame rates so latency will be acceptable. And on top of that, if you need to store this video data, you might ask Google if you could use one of their datacentres for storage since this high resolution video produces terabytes of data.

So to be able to use let's say; 250MP 360 degrees video data in (near)real time, you need sophisticated compression techniques that allow transportation of the enormous amounts of video data in a way that the operator can still utilize the enormous resolution to his benefits. Perhaps he wants to zoom in on a certain point or maybe record another part of the scene. Can all of this be done with virtually no latency? The answer is: yes!

Take the ITS Buzzard camera for example. This 50MP camera delivers 30fps global shutter video data. Together with our partner Horus view and explore we combined 5 of these cameras into a 360 degrees video camera. The goal: To achieve 30fps, 250MP, 360 degrees video and therefore being able to drive and capture these high resolution images at the same time. ITS developed a revolutionary compression technique called **BitSqueeze™**. This technique allows 250MP video data to be transferred in near real time, without any noticeable lag or artefacts in the picture.

BitSqueeze™ is a light-weight highly parallelizable virtually lossless video compressor that squeezes video data by removing redundancy on a frame-to-frame basis, similar like Motion JPEG (MJPEG). Also compression ratios are comparable to MJPEG. Because no motion estimation is used to compress video, no external (SDRAM/DDRx memory) is required, simplifying implementation. This also heavily reduces the data latency; the **BitSqueeze™** IP-core's latency is in the order of microseconds in a streaming video application.

BitSqueeze™ IP is ultra-small, but the final size depends on the amount of parallelism that will be required or implemented. **BitSqueeze™** can be implemented in FPGAs, CPUs and GPUs.

With **BitSqueeze™**, high resolution video material can be managed in a very smart way. Whether you want to store it or display it, this scalable solution reduces the complexity and cost of your entire system. There is no trade-off to visual quality, keeping the bandwidth at usable levels.

BitSqueeze™ technology is a game changer for extreme high resolution situational awareness or surveillance video. Applications which could benefit from this technology are; situational awareness systems, mobile mapping, surveillance, broadcasting, and many others. Either implemented in our Buzzard camera or available as IP to be integrated into your FPGA, CPU or GPU based solutions **BitSqueeze™** is available for you!

Visit www.its-hightech.nl for more information or request a quote at info@its-hightech.nl.