**NUUO TECHNICAL QUARTERLY**

**Fisheye Dewarp**

**NUUO** is the open platform leader in software-centric video solutions. We innovate to answer the need for sophisticated yet simple to use surveillance products. With solutions designed for every vertical industry, we have crafted an exciting array of products suitable for any surveillance needs. Our products offer unmatched flexibility from combining open platform and open standards, yet remain feature rich and highly customizable. With a growing list of 1800 compatible cameras, NUUO leads the market with excellent camera compatibility and analog/IP camera integration. In this issue of NUUO Technical Quarterly, we hope to address the concern for reliable video surveillance in this issue with an overview of an important technology breakthrough - The NUUO Fisheye Dewarp Algorithm.

**The Wider The Better**

Field of view is an important aspect to consider when selecting surveillance cameras. Fixed cameras that focus into one specific spot are usually used for entrance and exits. To cover a wider area like warehouses, parking lots, or stadiums, wide angle cameras, fisheye cameras, or software panoramic imaging solution must be used to provide a broader coverage.

360° panoramic fisheye cameras bring immense benefits to the user. By providing a complete field of view coverage this can significantly reduce cameras required to cover a particular area, thus saving costs on equipment. Fisheye camera also reduces mechanical failure as there are no moving parts and is great for forensic analysis as subjects can be followed from a single uninterrupted camera view.

Fisheye cameras do possess one inconvenience of their own. Images taken straight off a fisheye camera appears to be circular or elliptical due to the camera lens construct, and therefore require either built-in dewarp functions provided by camera vendors or on VMS clients in order to un-wrap the images back to Dewarping done on the camera end (edge dewarping) or from VMS client (host dewarping) are both valid solutions, however the edge dewarping is inflexible in operation and doesn’t provide any expansion possibilities. Whenever possible, host dewarping should always be chosen as the preferred solution.

**Different Dewarp Algorithms**

- *Dewarp: Rectilinear*
- *Dewarp: Equirectangular*
The NUUO Dewarp Solution

NUUO offers powerful and efficient dewarping algorithm on our award winning NUUO Crystal™ at no additional costs. NUUO Dewarp algorithm offers pre-calibrated generic fisheye dewarping functions for all NUUO supported fisheye cameras. Powerful and flexible, This dewarp algorithm supports all ONVIF standard fisheye lenses. NUUO Dewarp also supports GPU acceleration at full resolution so the dewarp process is not only smooth and fast but also allows for additional calibration and image tweaks that can enhance the overall image quality. OpenCL standard was adopted during the algorithm design process so that the resulting images will always be better in quality but uses lower CPU consumption.

Under certain scenarios, with GPU acceleration enabled this translates to a savings of 30% in CPU processing, or around 25% when using digital PTZ to navigate the scene. NUUO Dewarp is built into our VMS solutions such as NUUO Crystal™. There are no plugins to install or configure. Simply drag and drop any NUUO supported fisheye camera to the viewing UI in NuClient on the NUUO Crystal™ and the view from fisheye camera will be dewarped accordingly. Truly easy to use, NUUO Dewarp is the best choice for pairing with high resolution fisheye cameras.

The Right VMS for You

All the design decisions and features that went into the NUUO Crystal™ results in a highly independent and highly available VMS system. Open, Powerful, Secure. The award winning NUUO Crystal™ represents the next level in VMS evolution. As the industry moves towards an IP based ecosystem and the camera setup matures, better imaging technology on VMS systems allows for greater flexibility. It is important to choose the right VMS that provides the greatest user benefit and flexibility while remaining powerful at the core.

For more information, check out NUUO Crystal™ at http://www.nuuo.com/crystal today.