



FOR IMMEDIATE RELEASE

Pinnacle Imaging Systems™ Announces Licensing of Ultra HDR™ IP Cores to Power Next Generation High Dynamic Range Video and Still Cameras

Belmont, C.A. – March 30, 2016 – Today, [Pinnacle Imaging Systems™](http://www.pinnacleimaging.com), the HDR experts defining the future of digital high dynamic range capture, announced the immediate availability of its new Ultra HDR™ IP cores and high dynamic range video capture technology. With the licensing of its HDR technology, Pinnacle Imaging is porting its capture technology, proven in its previous still-image software implementation, to embedded solutions for HDR video capture. Pinnacle Imaging's Ultra HDR technology is an ideal solution for OEM or manufacturers looking to capture and render very high dynamic range scenes in digital video applications. Many industries and applications can benefit from improved image detail in the deep shadow and bright highlight areas such as security and surveillance, intelligent traffic and transportation systems, after-market automotive camera systems, wearable camera and vision systems, etc. For more information on Pinnacle Imaging's Ultra HDR technology, or to review sample video, please visit: <http://www.ultrahdrvideo.com>.

Maximizing High Contrast Scene Detail with Ultra HDR™ and Scalable Design

Designated Ultra HDR™, Pinnacle Imaging's patented HDR merge and tone mapping IP cores are modeled on true human vision to ensure preservation of a scene's true colors throughout the tone mapping process. Ultra HDR provides capture and proprietary adaptive tone mapping of HDR scenes up to 19 EV or 115 dB. Pinnacle Imaging's Ultra HDR technology can capture 120 fps (merging four exposures per frame), and stream full 1080 HDMI tone mapped video for display at up to 60 fps in real time.

Pinnacle Imaging's merge and tone mapping IP algorithms are scalable and flexible enough to accommodate different capture modes such as two, three or four exposure brackets, dual conversion gain or any combination thereof. This enables the Ultra HDR technology to adapt to a number of different components, design priorities and BOM requirements. Ultra HDR IP Cores can be ported to support a number of different sensors types and logic (FPGA, ISP, DSP+SoC, or ASIC).

"Even the most modern image sensors are limited in the dynamic range which they can capture," said Alfred Zee, President & CEO of Pinnacle Imaging Systems. "We believe that cameras should be able to provide the same contrast range that we naturally see with our own eyes, so we based our technology on the human vision model. It's this unique approach that allows our Ultra HDR technology to deliver such color-accurate, high contrast video quality."

Pinnacle Imaging Systems' Ultra HDR technology addresses many of the complexities involved in HDR video capture including:

- Automatic Ghost Removal & Halo Reduction – Compensates for movement between HDR exposures, from minimal camera motion to moving objects between frames
- Adaptive Local Tone Mapping – Automatically optimizes the tone mapping parameters based on the shadow and highlight areas of each individual video frame to ensure a more natural look to the output video
- Automatic White Balance Controls – Automatically calculates proper white balance settings for any scene or lighting condition
- Automatic Exposure Controls – Real time calculation and adjustment of the sensor's exposure settings based on an automatic or manually selected region of interest to allow accurate exposure throughout a scene
- Shadow Exposure Bias Option – Ability to bias tone mapping with an additional Shadow Tracking option during the Auto Exposure mode for optimal shadow detail and data preservation, a key requirement for surveillance applications

With initial FPGA implementation completed, Pinnacle Imaging IP blocks can now be ported to ASIC, DSP+SoCs or ISPs.

Industry Demands & Dev Kits Available

Numerous industries are now demanding the ability to capture improved video quality of high contrast scenes only made possible by Ultra HDR video capture. Where standard dynamic range cameras simply sacrifice shadow or highlight detail in high contrast areas, video cameras incorporating Ultra HDR can deliver natural looking tone mapped image detail in both the bright highlights and dark shadows.

For example, compact POV action cameras notoriously have difficulty in high contrast situations. Pinnacle Imaging's Ultra HDR technology allows a skier to capture both highlight and shadow detail despite the constant transition from bright white snow to shaded trees. Similarly, embedded HDR capture improves high contrast situations such as a police dash cam that cannot provide sufficient detail of a road-side encounter against oncoming headlights. This same technology allows surveillance cameras to track a suspect from a sun-drenched parking lot into a dim interior.

"We are currently seeing growing demand for HDR capabilities embedded into video cameras and production equipment," said Ron Tussy, Director of Business Development for Pinnacle Imaging Systems. "Our proprietary embedded HDR tone mapping is a critical underlying technology necessary to improve data capture for technologies used in range finding and recognition in automotive, security and surveillance or any other field demanding video to be captured across very bright and very dark areas."

Engineers, developers and manufactures interested in learning more about how Pinnacle Imaging's Ultra HDR technology can be integrated with their digital video capture devices can review sample videos and find more general information at <http://www.ultrahdrvideo.com>.

Developers interested in purchasing an Ultra HDR dev kit, should contact Ron Tussy at: 650-631-5737 ron@pinnacleimaging.com.

For any media interested in learning more about the new solutions from Pinnacle Imaging, a member of the Pinnacle Imaging leadership team can be made available for interview and/or to provide a full demonstration of the Ultra HDR capabilities. Mr. Tussy will also be available to any media or exhibitors at the upcoming ISC West Expo being held April 6-8, 2016 in Las Vegas, NV.

About Pinnacle Imaging Systems Corporation

Headquartered in Belmont, C.A., Pinnacle Imaging Systems, the HDR experts, is defining the future of digital high dynamic range capture and rendering. Built on a human vision model, its Ultra HDR™ technology delivers the utmost image detail to high contrast video. Long trusted by photographers for its still image HDR software solutions, Pinnacle Imaging licenses its technology for applications that demand maximum image data such as military, surveillance, law enforcement, drone cameras, professional and consumer still and video cameras, etc. More information about Pinnacle Imaging Systems can be found at: <http://www.pinnacleimaging.com/>.

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