

EXISTING DIGITAL CAMERA DESIGNS ARE OBSOLETE - Isis Project No 2557

A new high dynamic range image sensor will enable the next generation of digital cameras to surpass current performance.

Marketing Opportunity

- The estimated market for image sensors is said to be \$10 bn by 2008.

Image sensors for digital cameras consist of arrays of photosensitive picture element detectors (pixel detectors). An obsession with a camera's megapixel count has been the driving force in the industry during the last few years. There is a growing belief that the megapixel race has now run its course, with seven and eight megapixels being more than adequate for many applications. So - what will be the new driver in this consumer driven market?

Many electronic imaging devices use CCD sensors, but there has been increasing interest in the development of lower cost sensing systems based on CMOS technology that can incorporate all the requirements in a single chip. Whatever the sensor type the vast majority use the same sensing method: they integrate the photocurrent. Integration works well under uniform illumination, where the luminance of the subject has a low dynamic range (ability to detect very bright and very dark areas equally). Natural scenes often have a very large dynamic range, and this is a problem for conventional integrating pixels that have a linear output of relatively low dynamic range. The ability to image a naturally illuminated scene would be a key unique advantage in this consumer market.

The Oxford Invention

- A high dynamic range logarithmic camera offers a new market differentiator.

Linear cameras can be designed to capture high dynamic range images, but then suffer from slow speed, large image files and errors in colour reproduction. Existing high dynamic range logarithmic cameras while avoiding these problems unfortunately suffer from noise that degrades the quality of the resulting image.

The new Oxford pixel avoids the noise, and provides a high dynamic range output that can guarantee colour reproduction, in a smaller file and at video rates.

Patent Status

This work is the subject of patent application, and Isis would like to talk to companies interested in developing the commercial opportunity that this represents. Please contact the Isis Project Manager to discuss this further.

To Request Further Information Please Refer to Project Number 2557 - Existing Digital Camera Designs are Obsolete

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