

From “smart” applications through smart image sensors to smart images

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Abstract

Today, an increasing number of image sensors is providing more than just ‘pretty pictures’. We want to know more about the photons around us: intensity in different wavelengths like IR or UV or X-ray, time of arrival of the photons for depth measurement, change in intensity for event-driven pixels, or the energy of photons. In some cases, similar requirements extend to the detection of other radiation than photons, e.g. electrons. In parallel with the challenge of getting more information for each quantum of radiation, the number of image sensors around us is continuously growing. Both tendencies lead to an exponential increase in the number of data, and this in turn feeds a need for tools capable to control this proliferation and extract the useful information out of this deluge of data.

IMASENIC is a new name with a lot of expertise. It comes from the complementary world of scientific imaging and consumer electronics. The team is used to the challenges described above, whether it is developing a sensor capable to see beyond the visible spectrum, or to a sensor which can give more than as a greyscale. In the talk we will describe some of the sensors and applications where IMASENIC has been and is working, from high-dynamic range sensors for X-ray medical imaging, to fast, counting sensors for biological applications and smart sensors for low power, embedded vision systems. The talk will also cover the specific image processing challenges that each sensor and application bring in.