Sensata Technologies

**Workshop on Vision Processing - Optics to Output**

This workshop will explore how all the different elements from lenses to imagers to signal processing come together to make intelligent cameras for mass market cars. Hands on exposure to real hardware and software will allow the attendees to see the ease with which kernels can be assembled and an application built on a high performance platform.

Workshop is ½ day, morning only
Max # of attendees: 20

Lab Hardware: Sensata Vision Sensor and SMaL Camera Technologies Automotive Imager

Agenda

- Class welcome 8:00-8:10
- Vision applications now and future, Videos and hardware 8:10-8:30
- Vision system overview 8:30-9:00
- Optics 9:00-9:50
    - Impact of lens performance parameters.
    - Imager sensitivity affects on downstream analysis.
    - Criticality of imager dynamic range and its downstream impact.
    - The impact of rapidly changing scene illumination.
        - Lab demonstration: dynamic range control under different lighting conditions.
- Break 9:50-10:00
- Image pre-processing 10:00-10:25
    - Getting the image ready for analysis, thresholding, sub-sampling, contrasting, and other filters.
        - Lab demonstration: image acquisition and effects of pre-processing choices on performance.
- Image processing 10:25-11:25
    - Data flow through a typical system.
    - Effects of data flow choices on cycle performance.
    - Building up an application with Kernels (primitives) and a Vision System Support Library.
        - Lab demonstration: Hardware operation, building up an application with kernels in simple steps.
- Decision Making 11:25-11:40

- Outputting the decision- Communications 11:40-11:55
- Summary 11:55-12:15
    - Review of how the sub-systems come together for efficient vision processing.
    - Q&A

Sensata Technologies was formerly the Sensors and Controls Division of Texas Instruments. Sensata recently acquired SMaL Camera Technologies.
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