

Master Thesis Proposal

Current and state-of-the-art techniques of High dynamic range

Caeleste is a state-of-the-art imaging sensor company located in Mechelen, our activities include design, manufacture, assembly and characterization of fully customizable CMOS image sensors tailored to its customers specifications. We create sensors in applications for space, scientific, medical and industrial imaging. These different markets each have end applications where the implementation of HDR capable devices has a greater benefit to non-HDR capable devices.



One of the challenges of imaging outdoor scenes is to capture the wide range of light levels. Having both shaded and illuminated regions, will most likely result in the imager clipping in those regions and thus the information is lost. HDR sensors however allow to capture the full span of intensity variations that is present in everyday scenes, thus allows to capture much more information in those darkest or brightest regions of scenes.

Here at Caeleste we have designed several HDR capable devices in the past. Caeleste has interest in further developing its expertise in designing and testing its HDR capable devices and thus requires deeper understanding of the research field that encompasses HDR.

We invite smart and creative students to do their master thesis at Caeleste. We encourage the student to take on a summer job for the duration of 1 month at Caeleste. In this period the student can already work on his thesis.

The work will include a conceptual study and comparison of the different standards currently in use and in development and also state-of-the-art methods related to HDR.

The student will research on different methods of defining HDR, signal-to-noise ratio (SNR) and dynamic range (DR) as well as the different measuring methods. As part of this thesis, the student will also compare different forms of software and hardware HDR implementations. Measurements on actual Caeleste designed state-of-the-art HDR sensors will also be performed and analyzed in this work.

The thesis work includes a prior summer job; the total duration of the project work exceeds 6 months.

If you require more information please contact the project coordinator – Arno Van Hoorebeek at arno.vanhoorebeek@caeleste.com

If you wish to apply please contact Ewa Burzynska at jobs@caeleste.be.