

# **High dynamic range image composite using RAW data of a single image sensor**

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## **Abstract**

The image display technologies have limited dynamic ranges to represent brightness. Therefore, high dynamic range (HDR) image tone mapping techniques have been developed for compressing the dynamic range. The images generated by those techniques, however, cannot always represent impression formed at the real scene. It is not clear how to generate tone mapped HDR images close to our visual impression. In this study, we applied a spatially varying tone mapping technique to generate HDR image. We use the multiple exposure image of a wide dynamic range scene for this technique. However, it is very difficult to acquire multiple exposure image without subject blurring for same scene at the same time. Therefore, we acquire multiple exposure image from the RAW data of the single version imaging sensor which converted light into digital data just after that. The spatially varying technique for tone mapping brings higher contrast than the global one, but sometime yields un-realistic image. We compared generated images with several real scenes, and investigated desirable range and interval of exposure values. The results showed that those range and interval had limits for representing reality, and which depend on the brightness histogram of images.

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