Adaptive level of detail to surface expression

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There are researches about high quality of a material expression in the computer graphics such as using BRDF data or high definition texture. However, these methods calculate the details regardless of an impression of visual feature. According to that, the processing is not enough to be efficient.

In this research, I propose a method of expression of a material considered a visual feature. This method makes it possible to improve calculation efficiency. In addition, this method adapts Level-of-detail to the object surface details and changes three technique which are parallax occlusion mapping, bump mapping and texture mapping corresponding level of detail.

To adapt a concept of level of detail in a material expression, I performed the analysis of the visual feature about a material. I confirmed that a difference of the space frequency participated in the element which perceives visual information with bump. After that, I performed analysis of condition it is that a difference between the image by using our method to the image by parallax occlusion mapping.

As a result of comparing drawing with parallax occlusion mapping to drawing with proposed method about frame per second, it improves around 10%. In addition, a range of the threshold which is decided on the difference of the generated images by the difference technique has expanded from the result of the experiment.