
Stained Glass Image Generation using Voronoi Diagram and its GPU Acceleration

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The main contribution of this work is to propose a stained glass image generation based on the Voronoi diagram. In this work, we use the Voronoi cells and edges of the Voronoi diagram as colored glasses and leads in the stained glass, respectively. To fit Voronoi cells to the original image, we use a local search technique. Using this technique, we can obtain a high quality stained glass image that well-represents an original image. However, considering the computing time, it is not pragmatic for most applications. Therefore, this paper also proposes a graphic processing unit (GPU) implementation for the stained glass image generation employing the local search to produce the stained glass images. Experimental result shows that the proposed GPU implementation on NVIDIA Tesla V100 attains a speed-up factor of 362 and 54 over the sequential and parallel CPU implementations, respectively.

Keywords: Stained glass image generation, Human visual system, GPU, Parallel processing.