

Image Quilting for Texture Synthesis

Image Quilting [1] is a method for stitching sampled patches from a texture image to create bigger textures. The algorithm samples blocks from the original texture and it iteratively tries to stitch them together until the larger image has been generated.

Implementation

Baseline: A straightforward/unoptimized C or C++ implementation.

Optimized: A faster version using what you have learned in this course (e.g., vectorization and improving memory locality).

As fast as possible: An even faster version produced with more elaborate techniques, e.g., autotuning or code generation. The use of profiling tools such as VTune to analyze performance bottlenecks and to understand “behavior” of the code is highly encouraged.

Additional Resources

<https://imecom.github.io/projects/computational-photography/texture-synthesis/> this blog post describes the algorithm and provides a matlab implementation.

[1] <http://graphics.cs.cmu.edu/people/efros/research/quilting/quilting.pdf>