Tyler deBoon
120030
CMPT 450
Dr. Janzen

Non-Parametric Texture Synthesis

Description

Texture synthesis is the process of creating new textures. This can be done based on a sample image or completely randomly. Previous methods for texture synthesis have been based on statistical heuristics like sampling based on a probability distribution to create textures with similar statistical features. These methods can struggle with creating similar visual features from the samples. Non-parametric texture synthesis differs from previous methods by attempting to keep local structures. This method finds similar neighborhoods from the source image to what has already been created in the synthesised texture, the center pixel from the sample image is then added to the synthesised texture.

Expected Output

This project will create synthesized textures based on a sample image from either an empty image or a partially created images.

Reference

Efros, Alexi A., and Thomas K. Leung. "Texture synthesis by non-parametric sampling." Proceedings of the Seventh IEEE International Conference on Computer Vision (1999): Web.

Lab Description

Program a function that returns a list of all pixels that have at least one neighboring pixel already synthesized. These pixels will be the next pixels to be synthesized. Program another function to create a 2d gaussian array of arbitrary size. This function is used to weigh neighborhood pixels differences to preserve local structures.