

Fast Texture Synthesis using Tree-structured Vector Quantization

The project is about an algorithm generating textures out of sample textures. The goal of the project is to implement and optimize the algorithm described in the paper below:

<https://dl.acm.org/doi/pdf/10.1145/344779.345009>

Specifically:

- Implement the algorithm described in section 2 of the paper
- No need to adopt the algorithmic improvements presented in section 4
- Apply the techniques taught in the course to improve the performance of this algorithm

The algorithm uses a gaussian pyramid. This is created by repeatedly convolving the image with a gaussian kernel and then discarding half the rows and the columns to arrive to a smaller resolution. A good explanation of this can be found here:

https://docs.opencv.org/3.4/d4/d1f/tutorial_pyramids.html

An example implementation can be found here:

https://github.com/Dspil/texture_synthesis.git

It handles only grayscale images but the project should support colored images.

DISCLAIMER: the code is not thoroughly tested