Creating Large Textures

Motivation

- Generic terrain models for flight simulation and imagery simulation
- GPS-based navigation systems in automobiles
- Board games and adventure games
- Terrain modeling

Requirements

- Assembling large textures from a set of given generic textures or tiles
- Make sure that there is no noticeable repetition – lack of periodicity
- Accommodate different levels of detail

Objectives

- Creation of large textures from a set of generic tiles of textures
- Techniques to ensure that the tiles are assembled with a seamless transition from one type of terrain to another
- Creation of texture tiles that can *fit* against each other with no perceivable seam
- Creation of tile that will minimize the perception of repetition of tiles when there is only a limited number of tiles
- Image quilting
    - A technique to create tiles that will fit seamlessly against themselves if placed left to right or top to bottom (toroidal topology)

Outline

- Perceptual color spaces
- Isotropic toroidal or rotationally invariant texture patterns
- Multiple instances of texture tiles of same type
- Image quilting to build large textures of same type
- Assembling multiple tiles into lareg textures
- Creating large textures by overlays using a technique broadly classified as *paint by numbers*
- Adding other features to terrain