**3D IQ Instruction file**

The Matlab code presented below is a very simplified and schematic implementation of the 3D Image Quilting (IQ) algorithm. It corresponds to the very first version of the 3D IQ, but can be used for both unconditional and conditional (partially with a certain error tolerance) IQ simulations. This version can be used for both categorical and continuous variables. For instance, it uses square/rectangular tilesizes having similar/different dimensions in x, y and z axis. Only the core idea of the IQ is implemented and other features are on their way (such as multivariate 3D IQ simulation, Template Splitting Scheme for exact conditioning, Randomize patch size, 3D IQ analysis with auxiliary variable, parallel computing, and so on).

Authors: Kashif Mahmud and Gregoire Mariethoz, 2013

Instructions:

1. Run the Matlab function “CIQ\_3D\_v4.m”
2. Read the input training image (TI) with the following line:

X = LoadGrid('TI1\_WCA.SGEMS'); % Categorical variable

X = LoadGrid('paola\_bloc.SGEMS'); % Continuous variable

1. Parameters input list with a set of example:

tilesize = [30 20 20]; % Optimal size for the patch size is between 1/7 and 1/8 of the TI but this may vary for different TIs

overlap = [7 5 5]; % Optimal size for the overlap region is between 1/3 and 1/4 of the tilesize but this may vary for different TIs

nbreplicates = 5; % Standard Number of replicas = 5 to 10 to avoid "Verbatim Copy"

c = 0; % No of conditioning points (Generate from a simulation with randomized location, Don’t need to be defined if you load your Data file in the code)

w = 0; % Conditioning weight (Range [0 1])

w\_v = 1; % Each variable's weight (For Multivariable IQ analysis)

% This is an univariate IQ version, Multivariate version will follow soon.

nbrealz = 1; % Number of realizations to be produced

temp\_split = 0; % temp\_split = 1: Perform template splitting and temp\_split = 0: Do not perform template splitting

do\_cut = 1; % do\_cut = 1: Perform optimum cutting and do\_cut = 0: Do not perform optimum cutting

var\_type = 2; % catagorical = 1 and continuous = 2