

Retake Exam: Geometry

Duration : 45mn - 10 points

Please, send your final codes to: debayle@emse.fr

1 Percolation

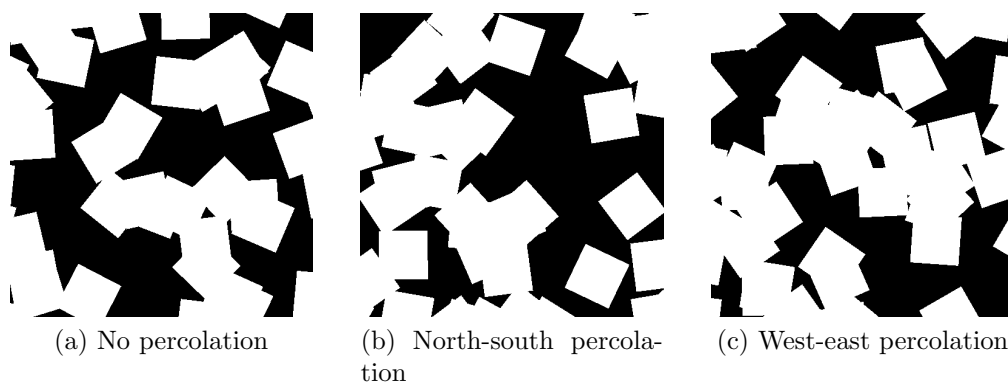


Figure 1: Different realizations of a Boolean model of squared sets.

A spatial structure percolates when an aggregate of objects connects two opposite faces. In 2-D, one can look at the north-south and west-east faces. Some examples are given in Figure 1.



- Implement an automatic method to test if a 2-D spatial structure percolates (north-south and west-east directions).
- Test your method on the three given images.
- When it percolates, compute the ratio between the surface area of the connected component that percolates and the total surface area of the objects.



Informations

You can use the function `bwlabel` to identify the different connected components of a binary image. It could help you to check the percolation!