

Pattern Synthesis

Keywords: Geometric algorithms, Non-Photo Realistic Rendering

Objective

Creating and manipulating intricate and visually pleasing patterns manually is a time-consuming and challenging task. The objective of this project would be to develop interfaces and algorithms to automatise this pattern synthesis to represent an image or 3D model. The project will begin with developing algorithms for analysing input images and 3D models to extract relevant geometric/visual features and properties. These features/properties are then used to generate patterns that capture the essence of the input image/model while introducing artistic and stylistic variations..



Number of students: 2-3

Supervisors: Pooran MEMARI (memari@lix.polytechnique.fr) and Amal Dev PARAKKAT (amal.parakkat@telecom-paris.fr)

References:

De Goes, Fernando, et al. "Blue noise through optimal transport." ACM Transactions on Graphics (TOG) 31.6 (2012): 1-11.

Yao, Chih-Yuan, et al. "Region-based line field design using harmonic functions." IEEE Transactions on Visualization and Computer Graphics 18.6 (2011): 902-913.

Huang, Xingchang, et al. "Patternshop: Editing Point Patterns by Image Manipulation." ACM Transactions on Graphics (TOG) 42.4 (2023): 1-14.

Liu, Difan, et al. "Neural strokes: Stylized line drawing of 3d shapes." Proceedings of the IEEE/CVF International Conference on Computer Vision. 2021.