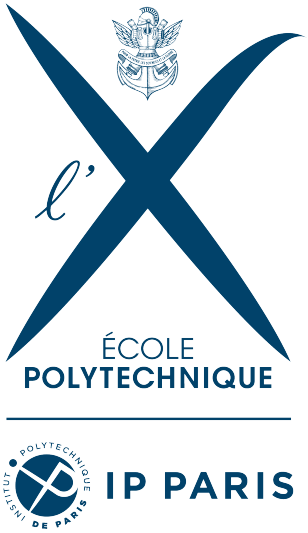
CSE306 Assignment 2

Geometry / Image Processing



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1 Introduction

During this project, I implemented the following features:

- A Voronoï diagram using Voronoï Parallel Linear Enumeration
- Sutherland-Hodgman polygon clipping algorithm
- Power diagram
- Optimizing the weights of the power diagram using LBFGS

In this report, I will mainly illustrate the rendered images after implementing each of the above features.

I have worked with Makram Loughman throughout the project so the structure may be similar but the code is distinct since each one of us implemented the algorithms by himself but discussed the theory. We also used the same test function in main to compare results.

2 Sutherland-Hodgman

2.1 subject polygon

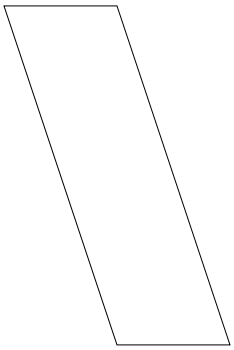

Figure 1: subject polygon

2.2 clipping polygon

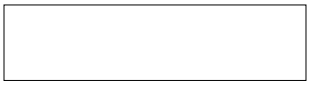

Figure 2: clipping polygon

2.3 clipped polygon

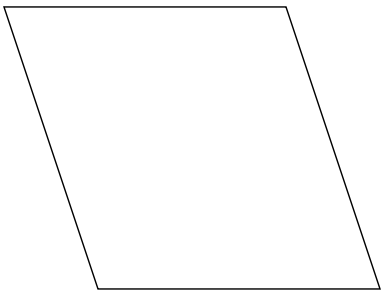

Figure 3: clipped polygon

3 Voronoi Diagram

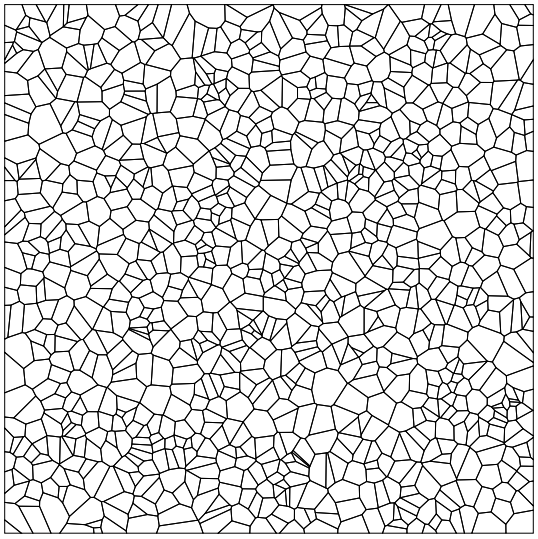

Figure 4: Voronoi Diagram

4 Voronoi Power Diagram

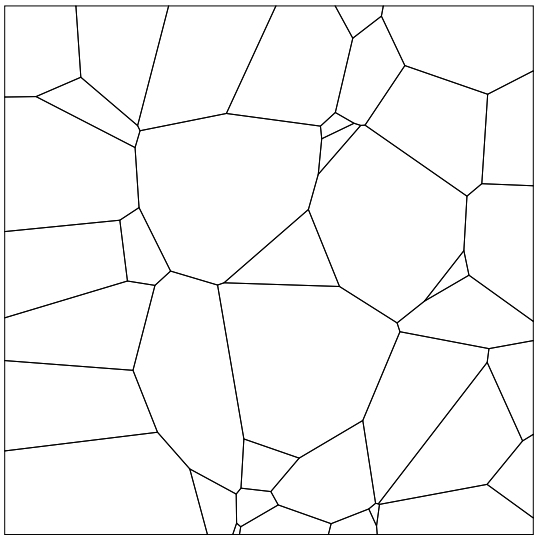

Figure 5: Voronoi Power Diagram

5 Semi Optimal Transport

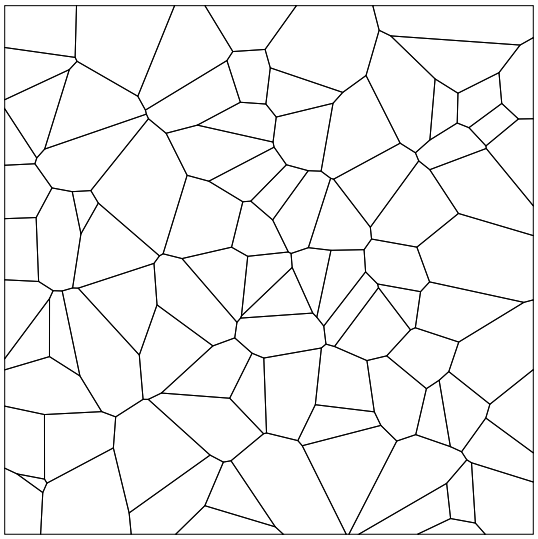

Figure 6: Semi Optimal Transport