# Delaunay Triangulations on the GPU

Patryk Drozd
Trinity College Dublin
drozdp@tcd.ie

**Abstract**

An exploration of the synthesis and implementation of Delaunay triangulation algorithms for their use in hetrogenous computing.

# Contents

# 1. Motivation

# 2. Preliminary

# 3. Serial Algorithms

## 3.1. Lawsons algorithm

### 3.1.1. implementation

## 3.2. Incremental Point Insertion

### 3.2.1. implementation

# 4. The CUDA programming model

# 5. Parallel Algorithms

## 5.1. GPU-DT

## 5.2. gDel3d

### 5.2.1. implementation

```
1:  procedure BINARY-SEARCH(A, n, v)
2:      l ← 1
3:      r ← n
4:
5:      while l ≤ r do
6:          mid ← floor((l+r)/2)
7:          if A[mid] < v then
8:              l ← m + 1
9:          else if A[mid] > v then
10:             r ← m − 1
11:         else
12:             return m
13:         end
14:     end
15:     return null
16: end
```

text in here and funny thing to [1]

# Bibliography

[1] W. H. Press, S. A. Teukolsky, W. T. Vetterling, and B. P. Flannery, *Numerical Recipes 3rd Edition: The Art of Scientific Computing*, 3rd ed. USA: Cambridge University Press, 2007.