# Parallel A* project

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**Abstract**

...Here the abstract...

## 1 Introduction: about the A* algorithm

(Explanation of the general A* problem)

## 2 A* project application

(What we will apply the algorithm to)

### *2.1 Heuristic function*

(Explanation + formula)

## 3 Test data and benchmark

(Explanation, include file reading problem)

**Random Graph** (Explanation about how the random graph was generated)

**Benchmark** (General details about the benchmark used and about the paths chosed)

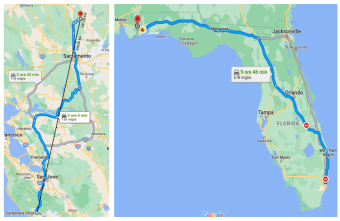

Figure 1: A subfigure

## 4 Sequential A* Algorithm

(Explanation)

### *4.1 Psedocode*

### *4.2 C Implementation*

(Explain the details of the input file and of the main data structures used)

### *4.3 Results*

(Results of sequential reading + A* sequential on random, BAY, FLA) (Table with numbers)

**Algorithm 1:** An algorithm with caption

**Data:** $n \geq 0$
**Result:** $y = x^n$
$y \leftarrow 1$;
$X \leftarrow x$;
$N \leftarrow n$;
**while** $N \neq 0$ **do**
  **if** $N$ *is even* **then**
    $X \leftarrow X \times X$;
    $N \leftarrow \frac{N}{2}$ ;  `/* This is a comment */`
  **else**
    **if** $N$ *is odd* **then**
      $y \leftarrow y \times X$;
      $N \leftarrow N - 1$;
    **end**
  **end**
**end**

## 5 A* and Dijkstra: a comparison

(Explanation)

### *5.1 Results*

(Picture A* vs Dijkstra on BAY and FLA)

## 6 Parallel reading of the input file

(Motivation of parallel reading)

### *6.1 Parallel Read: approach 1*

(Explanation)

### *6.2 Parallel Read: approach 2*

(Explanation)

### *6.3 Parallel Read: approach 3*

(Explanation)

### *6.4 Results*

(Plots of parallel reading vs sequential reading)

## 7 Parallel A*: two examinated approaches

(Explanation)

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### *7.1 First Attempt In Parallelizing A**

(Explanation + Pseudocode?)

### *7.2 HDA**

(Introduction + map with colored points)

#### *7.2.1 Message Passing Model*

(Explanation + Pseudocode?)

#### *7.2.2 Shared Address Space Model*

**Barrier(SAS-B)** (Explanation + Pseudocode?)

**Barrier(SAS-SF)** (Explanation + Pseudocode?)

### *7.3 Results*

(Plots with the comparison of all the models with sequential A* on random, BAY, FLA)

## 8 COMPLETE RESULTS

(Tables with numbers)

## 9 FINAL CONSIDERATIONS

(Comments)

## 10 DIMACS BENCHMARK

(More detailed explanation of the input format of the benchmarks)

## 11 FUTURE WORKS

(Possible improvements)

## REFERENCES