## Introduction

**▶** ????

#### Local Search and VNS

- ► Local search is a special case of VNS
- Multiple restarts
- ▶ ?????

#### Local Search and VNS

#### Neighbourhoods used:

- Swap two neighbours
- Split the permutation into two parts and swap them
- Swap two elements in the permutation
- Choose a part of the permutation and reverse it

## Memetic Algorithm

Based on a simple genetic algorithm.

- Selection:
  - ► Two variants of Roulette wheel selection
  - Deterministic tournament selection
  - Truncation selection
  - Tournaments selection
  - Hybrid approach
- Ordered crossover
- Mutation

## Memetic Algorithm

#### Additional improvements:

- ► Local search after selection
- Local search before returning the result

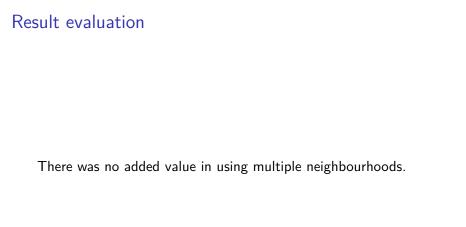
#### Results

► Local search: 1992

► VNS: 1985 ► MA: 1992



Local search worked well because it's simple and fast.





MA works well, but is very slow and sometimes unpredictable.

## Possible improvements

- Faster language?
- More careful parameter selection for MA?
- Replacing VNS with a different algorithm?

# Questions

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