



COLUMBIA UNIVERSITY  
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RESEARCH PROJECT

COMS 4901

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# Rust implementation of solutions to the Order Maintenance Problem

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# 1 Tests

Blabla

```
fn test() {  
    code = working;  
}
```

maths :

$$\begin{aligned} & \text{minimize} && \sum_{i=1}^n \sum_{j=1}^n c_{ij} x_{ij} \\ & \text{subject to} && \sum_{i=1}^n x_{ij} = 1, \quad j = 1, \dots, n, \\ & && \sum_{j=1}^n x_{ij} = 1, \quad i = 1, \dots, n, \\ & && x_{ij} \in \{0, 1\}, \quad i, j = 1, \dots, n. \end{aligned} \tag{1}$$

## 2 Introduction

- Problem
- Applications
- Litterature
- Goals

## 3 Algorithms

### 3.1 Naive

### 3.2 Dietz & Sleator

### 3.3 Bender et al.

## 4 Implementation

## 5 Testing, Benchmarking, and results

### 5.1 Unit tests, Integration tests, and Quickcheck

### 5.2 Bugs found and fixed

### 5.3 Benchmarks, Profiling, and Optimization

## 6 Conclusion and Future Work

- Test and benchmark on a microcontroller
- Try different allocation strategies
- Implement a "naive start" for small use cases