

Master Project

Experimental Comparison of Autonomous Vehicles Routing Optimization Algorithms

Author: Prisca Aeby ¹ prisca.aeby@epfl.ch
Supervisors: Bastien Rojanawisut ² bastien.rojanawisut@bestmile.com
Boi Faltings ³ boi.faltings@epfl.ch

June 22, 2017

¹ Section of Computer Science, École Polytechnique Fédérale de Lausanne (EPFL), Switzerland

² Scala Backend Software Engineer, BestMile, Switzerland

³ Artificial Intelligence Laboratory, School of Computer and Communication Sciences, École Polytechnique Fédérale de Lausanne (EPFL), Switzerland, liawww.epfl.ch

Abstract

Your abstract.

Contents

1	Introduction	4
2	Related Literature	4
2.1	Public Transport	4
2.2	Public Transport	4
3	Problem Formulation	4
4	Methodology	4
4.1	Simulation Framework	4
4.1.1	Simulated Vehicles	4
4.1.2	Reporting Metrics	4
4.2	Scheduling	4
4.3	Headway	4
4.4	4
4.5	4
5	Numerical Experiments	4
6	Conclusion	4

1 Introduction

General problem: two types of services, on-demand and fixed-line => explain why we focus on fixed line (all constraints of the platform)

2 Related Literature

Here talk about models proposed by Luts?

2.1 Public Transport

2.2 Public Transport

3 Problem Formulation

4 Methodology

4.1 Simulation Framework

graph explaining framework

4.1.1 Simulated Vehicles

start: spread on the line

4.1.2 Reporting Metrics

Logs fetched from database - vehicle logs - journey logs output graph

4.2 Scheduling

4.2.1 Vehicles' Behaviour

when they arrive at station, if they can they pick up the booking (based on booking size) they drop off bookings that finish here they wait based on headway computation
battery check if it is under threshold finish to drop off everybody and go to charging station

4.2.2 Headway

compute headway based on fleetorchestrationservice

4.2.3 Dynamic Fleet Size

how choose vehicles to send to charge and which ones to activate

5 Numerical Experiments

Real environment

5.1 Simulation Settings

5.2 Graph

Unless stated, charging locations at same place

5.3 Optimal Headway

5.4

5.5 Simulated Demand

5.6

6 Conclusion