

Project artificial intelligence 2018-2019

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1 Problem description

The Cambio car sharing project lets you make a reservation for a car at a specific time in a specific zone. The goal of this optimization problem is to find the most optimal location for each car, in order to assign as many reservations as possible in one city.

The city has been divided into zones, every car has a vehicle type and each reservation consists of:

- A required zone;
- A start and end date and time;
- A type of vehicle.

This means a request can only be assigned to the required zone, or a neighboring zone. Only cars of the right type can be used for a reservation. And of-course a reservation can only be assigned if a car is free for the entire duration of the reservation.

The goal is to assign each car to a zone, and assign each reservation to a car. No limit has been specified for the amount of cars assigned to one zone.

The cost of this problem has to be as low as possible, and can be calculated as shown in formula 1 where P_1 and P_2 are penalty factors.

$$cost = P_1 * \#Notassigned + P_2 * \#Assignedtoneighbor \quad (1)$$

2 Our approach

3 Results

4 Future work