

Specification Requirement Document

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Introduction

We are going to simulate an intelligent transportation system aimed at limiting the emission within cities.

Specifications

Control

Sensors

General emission beacons with sensors around the city used to calculate an average of the pollution in the city.

Actuators

Closing and opening roads coming or leaving from the city.

Plant

The plant is a graph model of cities where the nodes are the cities and the directed edges are highways connecting cities.

Cities (Nodes)

Every city node simulates the pollution currently in the city using a stochastic model for the internal traffic and infrastructure and the pollution from the vehicles

going into and out of the city.

Highways (Edges)

Every edge simulates the throughput of cars and/or pollution from the vehicles moving on the route. The edge also has two "opened" states that determine if the city on either sides allows vehicles at the moment.

Notes

- The model can be scaled to fit inside a single city where edges and nodes would represent roads and crossroads respectively.
- The model can also be used as a load balancing model with minimal changes.