7CCSMGPR - Traffic Simulation Project

Team Simulus

King's College London

https://github.com/leorohr/simulus

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- London congestion cost \$8.5bn in 2013, rising to \$14.5bn by 2030 [1]
- Road construction is expensive
- Simulation to the rescue!

- **Must**
  - Individual Vehicles
  - Vehicle Entrance and Exit
  - Vehicle Behaviour
  - Statistics - Delay, Average Speed, Congestion
  - Traffic Management Policies - traffic signal timing, speed limit, etc
- **Should**
  - Emergency Services
  - User Maps (Map Editor)
- **Could**
  - Save/Load User Maps
  - External Map Source e.g. Google Maps
- **Won't**
  - Pre-existing Traffic Simulators or Libraries

- **Discrete Prototype**
  - Logical simplicity
  - Limitation: discrete space
  - Unrealistic!
- **Continuous space + Cellular Automata**
  - Hybrid approach: Continuous space on top of grid
  - More realistic traffic simulation
  - Supported by additional map editor

- **Collaboration**
  - Utilising Github facility
  - Flexible Roles
- **Working Policy**
  - Cooperation
  - Responsibility
  - Self-organisation

- **Use case scenarios**
  - Traffic engineering
  - Road maintenance planned
  - Simulate

Questions

- Create road networks
- Import and export as 2D array (represented as XML) for simulation
- Map validation
- Flood fill
- Intuitive Click and Drag controls

- Different types of vehicles
- Different individual driving behaviours
- Overtaking vehicles
- Emergent phenomena
- Intersections
- Road Blockages
- Traffic phasing control

Future Work

- System Architecture(MVC) not fully adhered to
- More thorough testing
- Road expansion

References

Welcome

Team Simulus

Motivation

Aims

Design

Collaboration

Demonstration

Questions

Features -
Map Editor

Features -
Simulator

Future Work

References

1 Sarah Gordon and Jim Pickard. London's $8.5bn traffic jam slows down growth. http://www.ft.com/cms/s/0/a50158ee-52de-11e4-a236-00144feab7de.html, 2014.