Collaborative TEAM

Session: Multimodal optimization modelling
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TEAM objectives

Turn static into elastic mobility by balancing needs.

Fostering **collaboration** is the key concept of the TEAM applications.

Extend the concept of cooperative vehicle-2-x systems to include **interaction** and **participation**.

Make travellers and drivers, vehicles and infrastructure act as a **TEAM**

- adapting to each other
- adapting to the situation
Co-modality in TEAM

Example TEAM applications

(1) Collaborative co-modal route planning
   • integration real time conditions (e.g. pollution sensor data, traffic density), historical traffic info and user centric demands and constraints
   • provide end-users with alternative route choices and transportation modes based on balancing all user needs for ad-hoc control

(2) Co-modal coaching with support from virtual/avatar users
   • Co-modal real-time route recommendations that consider environmental footprint costs
   • Offering travellers information about most optimal travel mode.
   • Virtual avatar provides coaching feedback by comparing actual user behaviour with the suggested optimal behaviour

(3) Green, safe and collaborative driving serious game and community building
   • promote proper driver behaviour by providing a contest and incentives
   • Integrated with all other TEAM applications
TEAM approaches

Approaches

- Co-modal routing: Traffic network throughput optimization and generation of travel recommendations using latency functions (relationship between load and throughput per link)
  - Utilize volatility in traveller/driver needs, i.e. avoid travel time optimization
- Feedback control loops for real-time traffic optimization incl. traveller/driver coaching
- For the coaching and assessment of the individuals: serious gaming
  - Assign a cost in the sense of marginal cost incurred by someone behaviour, i.e., how much does the social cost (the sum of all drivers’ travel times) increase due to someone route or mode choice. This we could compare to the marginal cost incurred by the proposed route.

Status

- Required empowering components are being developed (e.g. TEAM LDM++)
- Cooperation with local public transport operators from TEAM pilot sites (Turin, Athens, Trikala Tampere, Gothenburg, Berlin) regarding deployment, demonstration, and assessment
- Large scale modelling and assessment is done using simulation environment VSimRTI
TEAM collaborations

Selected liaison and interaction partners and projects

- EUCAR
- AMSTERDAM GROUP
- POLIS
- VMZ
- BVG
- THE CITY OF TAMPERE
- compass
- DRIVE
- CONVERGE
- MOBINET
- simpli-city
Applications

Infrastructure.

(1) Collaborative pro-active urban/inter-urban monitoring and ad-hoc control
(2) Collaborative co-modal route planning
(3) Co-modal coaching with support from virtual/avatar users
(4) Collaborative smart intersection for intelligent priorities
(5) Collaborative public transport optimization
(6) Collaborative dynamic corridors
Applications

Travellers & drivers.

(1) Collaborative adaptive cruise control
(2) Collaborative eco-friendly parking
(3) Collaborative driving and merging
(4) Green, safe and collaborative driving serious game and community building
(5) Collaborative eco-friendly navigation