

Sustainable Urban Intermodal Transport for smart city

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Thesis supervision:

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Context:

The need for more sustainable cities defined by United Nations and should be accomplished in 2030 where transport is a key aspect regarding for urban function and improvement of life quality of their citizens. At the same time cities are facing huge impacts due to climate change, especially extreme events such as storms causing a lot of damage, economical lost and even human lost. Urban strategies to confront and adapt to climate change are being pursued. One adaptation strategy is to keep mobility services on going even during this climate impacts, showing the resilience of the city. Climate change also requires a strong reduction of carbon emission and transport is the main urban source of carbon emission, besides other local pollutants affecting air quality. Due to that, electrification has been seen as an important alternative for urban transport in order to promote a greener city. However, a completely new infrastructure is needed and there is also a lot of competition for energy services what might compromise electric energy supply

PhD work:

The objective of this PhD thesis is to develop a sustainable urban transport control system which can become extremely important facing future relevant issues of this century. Based on a relevant model to be developed, a new meaningful index that reflects state of urban transport should be realized. The definition of a support tool to assess decisions in case of climate change

extreme events, energy supply and human behaviour for passengers and freight transport systems (road/tracks/air/water) will be targeted like:

- 1- Anticipation. Decision for politics to develop urban transport strategies in case of emergency evacuation of people for instance.
- 2- Facing disturbances.
 - a. Decision to move. Different ways to use Human Machine Interfaces to ensure mobility (e.g., autonomous/semi-autonomous/manual control). Another component that has to be analyzed is how digitalization, IoT, among other very new ICT technologies are changing the society behavior. Depending on the way those news technologies are going to be accepted a smart urban mobility could be implemented and could be much more efficient.
 - b. Decision to join safe meeting point. This point requires transport availability in order to make the mobility of people possible toward these safe meeting points under climate constraints.
 - c. Decision not to move; organising logistics to keep city alive. This consists in making the city autonompous in terms of food, water or electrical power needs and supplies for instance.

Salary range: < 26 k€ annual gross

Skills / Candidate profile:

Candidates must have a strong background in Automation and Control, and should be convinced by the need to develop tools regarding the climate change, and have interest in the domain of sustainable transport, and be fluent in English.

Contact:

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Before May 10, 2020, send a detailed CV (including results from the last years of scholarship) and a motivation letter to: frederic.vanderhaegen@uphf.fr and simon.enjalbert@uphf.fr.