Commencement of Study: 1. October 2022

Study programme: Smart Cities

Školitel / Supervisor: prof. Ing. Ondřej Přibyl, Ph.D.

Téma: Integrace kooperativních autonomních vozidel do řízení dopravy

Doktorské téma je dohodnuto

Research topic is agreed with supervisor

Jazyk / Language: english

Anotace / Abstract:
Cooperative and automated cooperative vehicles (CAVs) are facing an enormous growth in both research and commercial projects. However, there is still limited knowledge of how to manage properly CAVs and how to integrate them into traffic and urban management. As part of this work, the student designs and implements algorithms for traffic control and optimization in the network with regard to autonomous vehicles.

The topic is thus focusing on distributed traffic control methods using multi-agent systems. The algorithms will include topics such as load balancing in the network (using routing), recommendations for changing the speed with regard to the green wave and traffic harmonisation, and others. As part of this work, the possibilities will be analyzed and new algorithms will be designed and further verified using simulation tools to determine their impact on transport and the environment.

Literatura / References:

Počet doktorandů / Number of doctoral students: 1

Forma studia: prezenční

Form of study: full-time
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<tr>
<th>Školitel / Supervisor:</th>
<th>prof. Ing. Ondřej Přibyl, Ph.D.</th>
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<tbody>
<tr>
<td>Téma:</td>
<td>Modelování dopravního chování s ohledem na mobilitu v chytrých městech</td>
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<tr>
<td>Topic:</td>
<td>Modeling of activity behavior with respect to mobility in smart cities</td>
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<td>Doktorské téma je</td>
<td>dohodnutoé</td>
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<td>Research topic is</td>
<td>agreed with supervisor</td>
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<td>Jazyk / Language:</td>
<td>english</td>
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**Anotace / Abstract:**
The aim of this thesis is to learn about the factors affecting travel behavior in smart cities, especially with respect to new travel modes and concepts (for example mobility as a service). This includes mathematical modelling and microscopic simulation of daily activity plans. Part of the work will include modification of simulation tools, with regard to measuring the impact of policies focusing on mobility as a service. It will be necessary to study the existing possibilities of microsimulation tools MatSim or SUMO, propose a solution to this topic and verify the approach in simulations.

**Literatura / References:**


**Počet doktorandů / Number of doctoral students:** 1

**Forma studia:** prezenční

**Form of study:** full-time
**Ústav / Department:** K617

**Study programme:** Smart Cities

<table>
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<tr>
<th>Školitel / Supervisor:</th>
<th>doc. Ing. Tomáš Horák, Ph.D.</th>
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<tbody>
<tr>
<td><strong>Téma:</strong></td>
<td>The New Last Mile Problem, Modelling and Visualization</td>
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<tr>
<td><strong>Doktorské téma je dohodnuté</strong></td>
<td>Research topic is agreed with supervisor</td>
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<tr>
<td><strong>Jazyk / Language:</strong></td>
<td>English</td>
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**Anotace / Abstract:**
The New Last Mile concept expects deployment of new technologies and new business models in order to provide a complete or at least a partial solution to the challenges posed by the last mile delivery of goods in cities. As the discussion in ongoing, so far a little effort was put into the simulation modeling of the New Last Mile. The goal of the dissertation thesis will be to identify a feasible last mile segment with respect to space and complexity and create a simulation model of such system. The thesis shall take into account the implications of the Quality of Living concept with reference to the research currently undergo in this area in the department.

**Literatura / References:**

**Počet doktorandů / Number of doctoral students:** 1

**Forma studia:** prezenční
*Form of study: full-time*
**Školitel / Supervisor:**
Doc. Ing. Tomáš Horák, Ph.D., školitel specialista: prof. Ing. Ondřej Přibyl, Ph.D.

**Téma:**

**Topic:**
Architecture and design of the LNG supply chain for the Czech Republic

**Doktorské téma je**

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<th>Research topic is</th>
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**Jazyk / Language:**

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<th>English</th>
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**Anotace / Abstract:**

The war in Ukraine has sparked a fresh round of debate on the Czech Republic's dependence on fossil fuels import, notably gas, from Russia. The liquified natural gas (LNG) seems to be a good alternative, however, a whole new LNG supply chain needs to be designed. The dissertation thesis shall focus to develop architecture and design of such supply chain that would enable to lower the Czech Republic's dependence on the Russian gas import. The student is expected to work closely with the Ministry of Transportation of the Czech Republic and other interested bodies.

**Literatura / References:**

Ursavas E., Zhu S.X., Savelsbergh M. LNG bunkering network design in inland waterways Transportion Research Part C: Emerging Technologies, 120, art. no. 102779

Prause F., Prause G. Inventory routing analysis for maritime LNG supply of German ports (2021) Transport and Telecommunication, 22 (1), pp. 67 - 86

**Počet doktorandů / Number of doctoral students:** 1

**Forma studia: prezenční**

**Form of study: full-time**
Commencement of Study: 1. October 2022

**Department:** K620

**Study Programme:** Smart Cities

**Supervisor:** prof. Dr. Ing. Miroslav Svítek, dr. h. c.

**Research Topic:** Smart parking as a part of a smart city

**Research topic is agreed with supervisor:** Yes

**Language:** English

**Abstract:**
Smart parking is an integral part of a smart city. As part of autonomous mobility, charging solutions for electric cars or refueling for hydrogen vehicles will be studied. The entire chain of autonomous mobility will be modeled using "resource-demand" agent systems, as supply will certainly exceed demand. Special algorithms for smart parking management will be tested at selected locations in Prague.

**References:**
https://doi.org/10.1007/978-3-030-69373-2_15