



K616Department of Vehicle Technology

MASTER'S THESIS ASSIGNMENT

(PROJECT, WORK OF ART)

Student's name and surname (including degrees):

Bc. Jan Macek

Study programme (field/specialization) of the student:

master's degree – IS – Intelligent Transport Systems

Theme title (in Czech): **Modelování ITS systémů na bázi agentů ve vozidlových simulátorech**

Theme title (in English): Agent-based modeling of ITS systems in vehicle simulator

Guidelines for elaboration

During the elaboration of the master's thesis follow the outline below:

- Agent based modeling and multi-agent systems introduction and application examples.
- Research of possible application of MAS or ABM for simulation of ITS systems.
- Research of available modules and libraries for implementation of MAS in different programming languages.
- Propose and design the methodology and algorithms for implementation for the simulation of an ITS system into an existing IVS using ABM.
- Evaluate advantages and disadvantages of ABM in IVS for ITS simulation.



Graphical work range: Determined by the supervisor

Accompanying report length: 55 pages of text (including figures, plots and tables) at minimum

Bibliography: RAILSBACK, Steven F. and Volker GRIMM. Agent-based and individual-based modeling: a practical introduction. Second edition. Princeton: Princeton University Press, 2019. ISBN 978-069-1190-839.
CHELIOTIS, Kostas. ABMU: An Agent-Based Modelling Framework for Unity3D, 2021

Master's thesis supervisor: **Ing. Dmitry Rozhdestvenskiy, Ph.D**
Ing. Libor Topol

Date of master's thesis assignment: **June 30, 2021**
(date of the first assignment of this work, that has be minimum of 10 months before the deadline of the theses submission based on the standard duration of the study)

Date of master's thesis submission: **May 16, 2022**
a) date of first anticipated submission of the thesis based on the standard study duration and the recommended study time schedule
b) in case of postponing the submission of the thesis, next submission date results from the recommended time schedule

L. S.

.....
doc. Ing. Petr Bouchner, Ph.D.
head of the Department
of Vehicle Technology

.....
doc. Ing. Pavel Hrubeš, Ph.D.
dean of the faculty

I confirm assumption of master's thesis assignment.

.....
Bc. Jan Macek
Student's name and signature

Prague June 30, 2021