MASTER'S THESIS ASSIGNMENT

I. Personal and study details

Student's name: **Mokoš David** Personal ID number: **457838**

Faculty / Institute: **Faculty of Electrical Engineering**

Department / Institute: **Department of Computer Science**

Study program: **Open Informatics**

Specialisation: **Artificial Intelligence**

II. Master's thesis details

Master's thesis title in English:

Online Planner for Food Deliveries

Master's thesis title in Czech:

Online plánovač pro rozvoz zásilek v gastronomii

Guidelines:

1) Study the literature in the field of vehicle routing problems, specifically vehicle routing problem with time windows (VRPTW)
2) Implement a baseline online food delivery planner based on insertion heuristic
3) Based on your research, choose a method for the online food delivery planner
4) Implement the online food delivery planner, and compare its efficiency with the baseline planner

Bibliography / sources:

[1] P. Toth and D. Vigo, Vehicle Routing: Problems, Methods, and Applications, Second Edition. SIAM, 2014.
[2] G. Berbeglia, J.-F. Cordeau, I. Gribkovskaia, and G. Laporte, "Static pickup and delivery problems: a classification scheme and survey," TOP, vol. 15, no. 1, pp. 1–31, Jul. 2007, doi: 10.1007/s11750-007-0009-0.
[3] J. Jung, R. Jayakrishnan, and J. Young Park, "Dynamic Shared-Taxi Dispatch Algorithm with Hybrid Simulated Annealing," Computer-Aided Civil and Infrastructure Engineering, vol. 31, Jun. 2015, doi: 10.1111/mice.12157.
[4] A. A. Syed, B. Kaltenhaeuser, I. Gaponova, and K. Bogenberger, "Asynchronous Adaptive Large Neighborhood Search Algorithm for Dynamic Matching Problem in Ride Hailing Services," in 2019 IEEE Intelligent Transportation Systems Conference (ITSC), Oct. 2019, p. 3006–3012, doi: 10.1109/ITSC.2019.8916943.
[5] J. Alonso-Mora, S. Samaranayake, A. Wallar, E. Frazzoli, and D. Rus, "On-demand high-capacity ride-sharing via dynamic trip-vehicle assignment," PNAS, vol. 114, no. 3, pp. 462–467, Jan. 2017, doi: 10.1073/pnas.1611675114.
[6] S. Muelas, A. LaTorre, and J.-M. Peña, "A distributed VNS algorithm for optimizing dial-a-ride problems in large-scale scenarios," Transportation Research Part C: Emerging Technologies, vol. 54, pp. 110–130, May 2015, doi: 10.1016/j.trc.2015.02.024.
[7] Y. Luo and P. Schonfeld, "A rejected-reinsertion heuristic for the static Dial-A-Ride Problem," Transportation Research Part B: Methodological, vol. 41, no. 7, pp. 736–755, Aug. 2007, doi: 10.1016/j.trb.2007.02.003.

Name and workplace of master's thesis supervisor:

Ing. David Fiedler, Artificial Intelligence Center, FEE

Name and workplace of second master's thesis supervisor or consultant:

Date of master's thesis assignment: **21.02.2021** Deadline for master's thesis submission: **21.05.2021**

Assignment valid until: **19.02.2023**

Ing. David Fiedler Supervisor's signature	Head of department's signature	prof. Mgr. Petr Páta, Ph.D. Dean's signature

III. Assignment receipt

The student acknowledges that the master's thesis is an individual work. The student must produce his thesis without the assistance of others, with the exception of provided consultations. Within the master's thesis, the author must state the names of consultants and include a list of references.

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Date of assignment receipt	Student's signature

