SEMINAR

“Investing in logistics facilities today to reduce routing emissions tomorrow”

Prof. Fabien Tricoire
Faculty of Business, Economics and Statistics
University of Vienna

Chair: Prof.ssa Claudia Archetti

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We investigate the trade-off between strategic investment in facilities and the long-term environmental impact of daily logistics operations. For that purpose, we consider a bi-objective location-routing problem with the objectives of minimising the cost of strategic investments such as locating facilities and acquiring different types of vehicles, and minimising pollution by using CO2 emissions as an indicator. A set of representative days of operations are used to estimate the long-term environmental impact. After modelling that problem as a mixed-integer program, we develop a decomposition approach that constructs routes, then uses them in a separate set covering model to generate complete solutions. The suitability of our approach is investigated on benchmark test instances as well as on a case study in the city of Vienna. Experiments show that our approach is a valuable tool in aiding such long-term decisions.