

Dynamics in Logistics – Models and Algorithms for Optimisation, Planning, and Control

- Special Issue Call for Papers for Logistics Research -

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Scope:

Models and algorithms are crucial to planning, controlling and optimising complex transport and logistic systems. The increasing data availability allows the incorporation of uncertainties and dynamic or stochastic behaviour as they are omnipresent in logistics. With progress in information and communication technologies as well as monitoring and computational capabilities, an improvement of design, fitting and validity of models arises.

Decomposition techniques such as multi-agent systems are often used to implement such an improvement by breaking down complexity and allowing for distributed or decentralised decision-making.

Analytic or (meta-)heuristic algorithms were proposed to handle the proposed models. (Meta-)heuristics attenuate the computational effort for a solution by the drawback of solution quality and complexity of centralised methods.

For both models and algorithms, distributed or decentralised approaches can be designed to guarantee the controllability of complex and large-scale systems. Enabled by the components of “Industrie 4.0”, edge computing and distributed sensing, the advances in digitalisation opened the field for data-driven models (e.g. digital twins), data-driven algorithms (e.g. machine learning-based control) or hybrid approaches (modelling, simulation and algorithms) for transport and logistic problems in recent years.

Topics:

This special issue should highlight recent advances beyond classical approaches in modelling logistic systems and algorithms to solve logistic problems. We cordially invite researchers and practitioners in engineering, business studies, computer science, and mathematics, who are facing the incorporation of data-driven aspects into modelling and algorithm approaches to optimise, plan, and control transport and logistic systems and networks. Contributions should clearly address applications in (intra-)logistics, transports, or logistic networks/supply chains. The range of topics for this special issue includes (but is not limited to):

- Data-driven modelling approaches/techniques (e.g. online models, digital twins, agent-based models)
- Complexity reduction in modelling (e.g. clustering, decomposition, aggregation)
- Planning and scheduling (e.g. simulation-based optimisation)
- Optimal/adaptive control
- Complexity reduction in control (e.g. distributed or decentralised approaches, iterative/sequential schemes, coordination)

Timeline:

- Call for papers: February 2022
- Submission deadline: 31 May 2022
- Planned publication: Beginning of 2023

Editors:

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