SPRINGER HANDBOOK - CALL FOR CHAPTERS

"Applied Simulation and Optimization Vol3: New Innovations In Logistics, Industrial and Aeronautical Practice"

Simulation is a widely recognised approach that operates across various levels of abstraction, integrating multiple components of a system under study, such as logistics, manufacturing, and operations. It involves creating a model of the system using formal methods, off-the-shelf software, or programming languages. In industrial settings, simulation is often employed to gain deeper insights into system behaviour. By using these models, researchers can conduct experiments to explore a variety of questions, such as testing new configurations, identifying bottlenecks, and pinpointing inefficiencies that lead to higher operational costs.

However, experiments conducted solely through simulation may not always yield optimal configurations for specific objectives, such as resource allocation, cost minimisation, or throughput enhancement. Optimisation techniques, on the other hand, are well-established and focus on representing a problem by considering only key variables, dependencies, and constraints. A common critique of optimisation techniques is that the abstraction process may overlook critical elements that affect system performance. As a result, the theoretically optimal solution may be difficult, or even impossible, to implement in a real-world system.

Artificial intelligence (AI) programming methods are revolutionising the development of more realistic and robust simulation and optimisation models. When combined with advanced simulation algorithms, AI allows for effective modelling of complex systems characterised by dynamic and stochastic behaviours. The integration of AI with simulation is particularly important in the context of digital supply chains, smart factories, and other critical components of Industry 4.0.

This book seeks to emphasise the importance of merging cutting-edge technologies such as AI, digital twins, and data science with simulation. We welcome manuscripts covering a wide range of applications, including manufacturing, transportation, supply chain management, and sustainability. Submissions that highlight the development of applications incorporating AI, optimisation, and digital twins are particularly encouraged.

Readers of this volume will benefit from a comprehensive guide that addresses complex challenges in industrial environments. The problems discussed will serve as illustrative examples, while the methodologies drawn from the scientific community will offer valuable tools and insights for solving similarly complex issues in real-world scenarios.

Topics of Interest

- Supply Chain
- Manufacturing
- Transportation
- Aeronautical Operations (Terminal, Side, Services)
- Facility Location
- Routing Problems
- Simulation-Optimization Methodologies
- Urban logistics
- Ports and Sea Transport
- Use of Big Data with SIM-OPT

We strongly welcome other topic suggestions dealing with convergence of the two approaches into an integrated methodology beyond the topics suggested above.

Schedule & Deadlines

- **31st December 2024**
  Notification for intending to contribute with a book chapter to help us in planning the review process (authors, preliminary title, and brief abstract of max. 250 words)
- **20th February 2025**
  1st manuscript version (also authors who did not notify us their intention to contribute are invited to submit)
- **1st April 2025**
  Review comments for 1st manuscript version and notification of acceptance
- **8th June 2025**
  Submission of the 2nd version of accepted book chapters
- **30th June 2025**
  Feedback from the editors if all criteria are met (e.g. page count, correct template, review comments addressed, appropriate English language, etc.)
- **15th August 2025**
  Final manuscripts to be sent to Springer-Verlag. Thereafter manuscripts cannot be updated (strict deadline)

Manuscript Preparation (please read carefully)

- Please prepare your manuscript according to the following guidelines:
- https://dam.springernature.com/file/BWCFhH3r4XcBIsQssnI2Bh/*/Manuscript_Guidelines_07-2024%20Version.pdf?authcred=Q29weVVSTDpDMHB5X1VSTA==
- Send the following files as **one .zip** file to one of the editors:
  o Authors short bios (collected in one word file)
  o Picture of each author
  o Original manuscript in word, LaTeX, or any other word processing format
  o PDF version of the manuscript
- Make sure that the following conditions are met for the final version of the chapter:
  o The submissions need proper English language editing. Please ensure that your final submission is proofread and written in proper English language
  o The submissions follow the Springer template
  o Each submission has to be structured according to the following 'template':
    ▪ Introduction and problem discussion
    ▪ Literature state of the art/Literature Review
    ▪ Methodology & Approach
    ▪ ... other content of the chapter ...
    ▪ Viewpoint on Convergence (min. 1/2 page, or add to the Conclusions section)
    ▪ Conclusions

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