

Report: ISIR Summer School 2021

Introduction

Organized by the International Society for Inventory Research (ISIR) and hosted by the University of Luxembourg, the 15th ISIR PhD Summer School was held in **Luxembourg-City, Luxembourg** from **August 23** until **August 27, 2021**. The ISIR bi-annual Summer School brings together PhD students and professors with a background in inventory management to discuss and improve their research. The ISIR 2021 Summer School was the first **in-person event** for many in a long time and the first in-person event at the University of Luxembourg since the start of the pandemic in March of 2020. The summer school was attended in person by 15 faculty members and 17 students. Unfortunately, some students and faculty had to cancel their attendance to the summer school at short notice due to covid related travel restrictions. The event was held under the covid-check regime in which all attendants were checked daily for full vaccination or a recent negative covid test.

The theme of the Summer School in 2021 was *“Data Driven Inventory Management and Modelling”*. Many presentations, including key-notes reflected explicitly on the role of data in inventory modelling as well as new sources of data and the opportunities provided by such data sources to understand aspects of inventory dynamics that are poorly understood currently.

Presentations

There were 14 presentation by PhD candidates in plenary session. Each presentation had assigned faculty and student discussants that provided thoughtful comments on the research presented. The program allowed for time during breaks, lunch and at the end of the day to continue discussion to test and improve research ideas of participants.

Key notes

Faculty key notes were provided by Kai Hoberg (whose presentation was delivered by Christina Imdahl at the last moment due cold symptoms), Nikolaos Kourentzes, Gudrun Kiesmüller, Willem van Jaarsveld, and Joachim Arts. Christina Imdahl discussed research on the role of human decision makers in technology driven supply chains and presented empirical findings. Nikolaos Kourentzes gave an overview of forecasting methodologies and their interface with machine learning and inventory management problems. Gudrun Kiesmüller explained advance demand information models and how they can be used with the types of data currently available. Willem van Jaarsveld provided a tutorial on reinforcement learning and how it can be used for inventory problems. Joachim Arts discussed different methodological approaches that arise in the study of high dimensional inventory problems.

Panel Discussions

The summer school included two panel discussions. The first panel on Tuesday afternoon discussed challenges in inventory management as seen by industry practitioners. The panel was moderated by Benny Mantin and discussed challenges such as sustainability, data management and simple vs sophisticated models. The panelists were Ward Passchyn (OM Partners), Allesandro Mantione (Goodyear), Andreas Braun (Price Waterhouse Coopers), and Steffen Klosterhalfen (BASF).

The second panel on Thursday morning discussed the publishing process. This panel was moderated by Sarah Van der Auweraer who engaged the students in the discussion. The panelists were John Boylan (International Journal of Forecasting Special Issue Editor; remotely due to COVID), Ruud Teunter (editor of the European Journal of Operational Research), Gudrun Kiesmüller (associate editor of OR Spectrum), Sandra Transchel (Sustainability Special Issue editor, Logistics Research editorial board).

Company Visit

On Wednesday morning, the group visited the intermodal container terminal of CFL multi-modal. Covid restrictions were such that a bus tour visit was possible. CFL is the Luxembourgish railway operator and its division CFL-multimodal operates freight train lines to different parts of Europe and has warehousing and Truck to Train operations.

Social Program

The attendants of the summer school got to know each other in an informal setting of Monday evening. After a scenic walk down the valley, participants could have a drink in the historic part of Luxembourg City. On Wednesday, the participants had lunch by Bio-diversity center and took a small walk to enjoy nature. Afterwards the participants visited Schengen, right at the border of Luxembourg, Germany and France. The Schengen treaty was signed on a boat on the Moselle river right next to Schengen. This treaty, signed in 1985, opened borders for travel in many European nations and has been a blessing to many ISIR participants and members. In Schengen the participants visited several commemorative art works that depict culture and important locations throughout Europe. At the end of Wednesday, the participants visited the Caves Poll-Fabaire, which is a vineyard and winery. There was a tour of the wine pressing process after which there was a dinner in a wine cave.

Conclusion

The ISIR 2021 summer school was a successful event that allowed your researchers in the inventory domain to discuss their research. After a long time of travel restrictions, it was the first event for many to interact with colleagues and build an international network.

Organizing Committee:

The ISIR 2021 summer school was organized by Joachim Arts, Benny Mantin, Melvin Drent, Nicole Perez-Becker, and Sarah Van der Auweraer.