



CORS · SCRO

Canadian Operational Research Society
Société canadienne de recherche opérationnelle

Monday, Nov 25th, 2024

9:00 – 10:00 a.m. EST

CORS Micro-Event (online):

An OR tale of Analytics, AI, and Auctions

Presented by

Fredrik Ødegaard, PhD, Associate Professor, Management Science, Ivey Business School, Western University



Bio:

Professor Ødegaard has a PhD in Management Science from the Sauder School of Business at the University of British Columbia, dual Master's degrees in operations research and Statistics from Stanford University, and an undergraduate degree in Purchasing and Logistics Management from Arizona State University. His PhD thesis centered on the analysis of online auctions as salvage sales channels, and how to optimally release inventory so as to balance the effects of price cannibalization and time-value depreciation. Dr. Ødegaard joined Ivey Business School in 2007 and has developed a wide spectrum of analytics courses within all programs offered at Ivey: HBA, MBA, MSc, PhD and Executive Education. He has taught courses on Decision Making with Analytics, Competing with Analytics, Revenue Management, Statistics, Big Data, Data Science, and Creative Analytics. His main research area is within Revenue Management and Auction Theory, but also publishes broadly within Operations Research and Operations Management, including health care, DEA, and supply chain management. Prior to his academic career, Professor Ødegaard worked as a Supply Chain Consultant for the logistics software provider i2 Technologies, and as a Programme Director at RR Institute of Applied Economics, during which he worked with a number of corporate clients, including Fujitsu-Siemens Computers, Nokia, Lucchini, Infineon, Royal Copenhagen, Novo Nordisk, the Swedish Armed Forces Head Quarters, the Swedish Institute Evaluation of Labor Market and Education Policy, and the Danish Ministry of Energy.

Dr. Ødegaard is an active member of the Canadian Operational Research Society and has served in numerous roles, including the 2015-2016 President, and Chair of CORS 2019 Saskatoon and CORS 2024 London annual conferences. He also serves as editorial board member of the *Journal of Revenue and Pricing Management*.

Abstract

Auctions are an interesting, and ancient, form of establishing market prices and allocation of resources. Most people associate “auctions” with the open English format, where a group of people openly call out their bids and who ever bids the highest wins the item. There are, however, many different types of auctions, some of which may seem very peculiar and strange. In this talk I will present a brief primer on the analysis of auctions and competitive bidding, and in particular highlighting the contributions made by the Operations Research community – including my own. I will also share results from my most recent research project where, together with my colleague Joshua Foster, we analyze auctions using Large Language Models (LLM).

Register at: <https://forms.gle/QYCx5Gqaf7vBYh986>

Queries : president@cors.ca

Organized by: Anjali Awasthi, President CORS, CIISE, Concordia University



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Monday, Nov 25th, 2024

10:00 – 11:00 a.m. EST

CORS Micro-Event (online):

Innovations in the use of video for traffic management

Presented by

Christian C Lemire, Product Group Director, Unification, Genetec Inc., Montreal



Bio:

Graduated from the University of Montreal with a Masters in Physics. Started a company and was an entrepreneur for a decade. Became Director of Sales & Marketing for an innovative software company in the construction industry.

Joined Genetec in 2016 to spin up a group focused on Intelligent Mobility then took on the role of Director of Cities Application group in 2020. Took on the directorship of the Security Center Unification in 2023.

Abstract

The importance of video in traffic management has been increasing since its introduction with analog cameras in the 60s. Video is now critical to traffic management operations and road safety. It supports the identification and validation of potential hazards and traffic issues. Unfortunately, there is just too many cameras to monitor for traffic management center operators. In fast moving traffic, every second counts, so sometimes the reaction time of operators is not fast enough. Take for example a vehicle stalled in a fast moving lane just after a curve. If oncoming drivers are not warned within seconds, deadly accidents can occur within seconds. Because of this, agencies are trying to automate the detection and mitigation plan to reduce the risk. In urban areas, the need to better manage the flow at peak hours as lead to a higher demand in smart traffic signals, which requires at a minimum the to detect vehicles waiting at the intersection. Traditionally, intrusive road sensors or expensive road-side sensors have been used for these types of detections. Video analytics were sometimes considered, but the until recently, this only really worked in tunnels or by using expensive thermal imaging. Pixel change algorithms that were used in the past could easily get confused by changing in lighting or road conditions. On open roads, the actionable alarm ratio could be as low as 1% and rarely above 10%. That quickly gave alarm fatigue to operators, who just ended up disregarding any alarms coming from those systems. Then came the revolution with Deep Neural Networking algorithms. Using DNN, we can now detect objects in the field of view, such as vehicle (by category), people and other objects. This innovation opened a whole new level of video analytics utilization for traffic management. What used to be confined to tunnels could now be applied on open roads without creating an annoying number of false positives, and improving the false negative rates. It made it usable at intersections where the algorithm could count the number of vehicles waiting in the queue and how long they have been waiting, adding important data to the decision flow of the smart intersection. A new avenue also opened up; the replacement of intrusive road sensor by cameras for data collection such as vehicle classification, volumes, occupancy and even travel times where license plate recognition can be used. The use of video analytics is now very attractive for road agencies. Not only because it is now accurate, but because it is a non-intrusive and relatively cheap sensor. Cameras can now present multiple uses: monitoring, automated incident detection, visual validation and data collection. This is the best ROI in the market. In this talk, we will explore how we got here and some of the applications of this technology.

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