

Data Understanding, Data Analysis, and Data Science

Volume 5 – Special Topics in Data Science and Artificial Intelligence

Conclude your journey through data science with **Special Topics in Data Science and Artificial Intelligence**, the fifth and final volume of **Data Understanding, Data Analysis, and Data Science**. This volume explores a range of advanced subjects that reflect the current frontiers of research and practice in the field.

Readers will examine big data, deep learning, natural language processing, recommender systems, network analysis, computer vision, causality, reinforcement learning, and differential privacy. The content balances theoretical depth with practical relevance, allowing readers to connect core ideas with emerging innovations.

Consistent with the series as a whole, this volume emphasizes insight over implementation and encourages a reflective approach to learning. Whether completing a programme of study or preparing for professional application, **Special Topics in Data Science and Artificial Intelligence** offers a broad and thoughtful perspective on the evolving role of data in science and society.

About the Author



Patrick Boily is an Assistant Professor in the Department of Mathematics and Statistics at the University of Ottawa. He earned his Ph.D. in Mathematics in 2006 and is the author of several textbooks on mathematics, statistics, and data science, available at idlewyldanalytics.com.

Since 1999, he has taught more than 75 courses at the University of Ottawa, the Université du Québec en Outaouais, and Carleton University. From 2008 to 2012, he served as a federal public servant, contributing to several projects including the award-winning *Canadian Vehicle Use Study*. From 2012 to 2019, he launched and managed Carleton University's *Centre for Quantitative Analysis and Decision Support* (CQADS), and he was a founding member of the Data Action Lab, which offered workshops, short courses, and consulting services in data analysis.

Patrick's academic work focuses on the application of mathematics and statistics to evidence-based decision support. He has provided consulting services to a wide range of public and non-profit organizations, including United Way, the Public Health Agency of Canada, the Canadian Air Transport Security Authority, and the Department of National Defence. His areas of expertise include operations research, data science and predictive analytics, stochastic modelling, and simulation.

Patrick is an avid hockey player, cross-country skier, cyclist, mountain biker, and swimmer; he enjoys crosswords, playing the guitar, and watching British murder mysteries. He lives with his family in Wakefield, Quebec.