



Contribution ID: 123

Type: **not specified**

## **From Automation to Autonomy: New Frontiers of AI and Statistics for Data in Business and Industry**

The rapid evolution of Artificial Intelligence is transforming how data is generated, analyzed, and leveraged across business environments, industrial systems, and organizational processes. Moving beyond the traditional Industry 4.0 paradigm centered on automation, new AI technologies are opening the way toward increasingly autonomous data-driven systems capable of supporting complex decision-making, knowledge generation, and adaptive operations.

This panel session brings together internationally recognized experts to explore the evolving intersection of artificial intelligence (AI), generative AI, and statistical methodologies in modern business and industrial contexts. The discussion will focus on how statistical thinking continues to provide essential foundations for AI-driven approaches, enabling robust, interpretable, reliable, and scalable solutions across a wide range of applications.

Particular attention will be devoted to emerging developments such as large language models (LLMs), synthetic data generation, foundation models, and generative AI tools, and to the ways these technologies are reshaping data management, analytics, and operational processes within supply chains, business functions, and industrial applications. Panelists will discuss both opportunities and challenges related to data quality, model interpretability, governance, human-AI interaction, and the deployment of AI systems in real-world environments.

The session will also examine how these technological advances may influence future research methodologies and industrial innovation, reflecting on the evolving role of statisticians, data scientists, and domain experts in bridging methodological rigor with practical implementation. By fostering a multidisciplinary and collective discussion, the panel aims to provide insights into the transition “from automation to autonomy” and the new frontiers emerging at the intersection of AI, statistics, business, and industry.

### **Special/ Invited session**

Panel session on AI, Statistics, and Data in Business and Industry

### **Classification**

Both methodology and application

### **Keywords**

Artificial Intelligence, Generative AI, Statistics for Business and Industry, Synthetic Data, Large Language Models, Model Interpretability

**Primary authors:** COLOSIMO, Bianca Maria (Politecnico di Milano); PAYNABAR, Kamran (School of Industrial and Systems Engineering)

**Presenters:** COLOSIMO, Bianca Maria (Politecnico di Milano); PAYNABAR, Kamran (School of Industrial and Systems Engineering)

**Track Classification:** Other/special session/invited session