

# Introduction to the WI2021 Track: Data Science & Business Analytics

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## 1 Track Description

The increasing availability of data and advances in data processing and analysis methods have led to a flourishing of data science and business analytics. This not only constitutes new research efforts in information systems research (e.g. artificial intelligence (AI), processing of unstructured data, decision support systems, or visualization), but also has a significant impact on established topics in information systems research such as business intelligence and decision support systems. In this track, we welcomed the entire diversity of information systems research efforts in the fields of data science and business analytics and were open to all methodological approaches.

## 2 Research Articles

We received 23 submissions out of which we selected 17 for peer review. Finally, we selected seven papers for inclusion into the conference program. We had the broad and extensive support from a very knowledgeable set of associate editors and reviewers. Without their help, compiling the track program would not have been possible!

Across the accepted papers, we found three overarching and recurring themes that were also touched by some of the submissions that were not accepted for publication: (1) applications of text mining and natural language processing, (2) improving recommendation systems for e-commerce, and (3) adoption and management frameworks for machine learning and AI. A common meta-topic across all papers also included the systematic integration of unstructured data sources and extracting information from them in order to create better information systems or managing them more effectively.

## **2.1 Applications of Text Mining and Natural Language Processing**

The first stream of research in this track deals with developing novel applications of text mining and natural language processing. The joint goal of these papers is to distill relevant information from large corpora of text such as invoices (Krieger et al. 2021), discussion topics on digital platforms (Kauschinger et al. 2021), and the scientific computer vision literature (Kortum et al. 2021).

## **2.2 Recommendation Systems in E-Commerce Applications**

The second stream of research proposes novel approaches to improve recommendation systems in e-commerce settings. The work of Haubner and Setzer (2021) evaluates the value of a novel weighting scheme for ensembling the predictions of individual regression-based recommendation systems. Similarly, Meydani et al. (2021) try to increase the performance of graph-based recommendation system by considering the inferred level of trust among users and its evolution.

## **2.3 Adoption and Management Frameworks for Machine Learning and Artificial Intelligence**

The final stream of research deals with presenting novel frameworks for managing AI more effectively. Kaymakci et al. (2021) focus on a generic conceptual model of an AI system for the application in manufacturing and a four-phase model to guide developers and project managers. Similarly, Fahse et al. (2021) introduce a framework for managing bias in machine learning projects that provides an overview of potential biases and corresponding mitigation methods for each phase of the well-established CRISP-DM process model.

## **3 Associate Editors**

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- Lena Wolbeck, Freie Universität Berlin
- Lin Xie, Leuphana University of Lüneburg

#### 4 References

- Fahse, T., Huber, V., and Giffen, B. v. 2021. "Managing Bias in Machine Learning Projects," *International Conference on Wirtschaftsinformatik*, Essen, Germany.
- Haubner, N., and Setzer, T. 2021. "Hybrid Recommender Systems for Next Purchase Prediction Based on Optimal Combination Weights," *International Conference on Wirtschaftsinformatik*, Essen, Germany.
- Kauschinger, M., Schrieck, M., Böhm, M., and Kremer, H. 2021. "Knowledge Sharing in Digital Platform Ecosystems – a Textual Analysis of Sap’s Developer Community," *International Conference on Wirtschaftsinformatik*, Essen, Germany.
- Kaymakci, C., Wenninger, S., and Sauer, A. 2021. "A Holistic Framework for Ai Systems in Industrial Applications," *International Conference on Wirtschaftsinformatik*, Essen, Germany.
- Kortum, H., Leimkühler, M., and Thomas, O. 2021. "Leveraging Natural Language Processing to Analyze Scientific Content: Proposal of an Nlp Pipeline for the Field of Computer Vision," *International Conference on Wirtschaftsinformatik*, Essen, Germany.
- Krieger, F., Drews, P., Funk, B., and Wobbe, T. 2021. "Information Extraction from Invoices: A Graph Neural Network Approach for Datasets with High Layout Variety," *International Conference on Wirtschaftsinformatik*, Essen, Germany.
- Meydani, E., Düsing, C., and Trier, M. 2021. "Towards a Trust-Aware Item Recommendation System on a Graph Autoencoder with Attention Mechanism," *International Conference on Wirtschaftsinformatik*, Essen, Germany.