Multi-modal Artificial Intelligence and the Future of Universities

Artificial intelligence (AI) leveraging multiple data sources and input modalities (tabular data, computer vision, and natural language) is poised to become a viable method to deliver more accurate results and deployable pipelines across various applications. This work proposes and evaluates a unified Holistic AI in Medicine (HAIM), Agriculture, Meteorology, and Law. We show that our proposed framework can consistently and robustly produce models that outperform similar single-source approaches across all these applications. We also quantify the contribution of each modality and data source using Shapley values, demonstrating the importance of heterogeneity in data type and the necessity of multimodal inputs across different fields. Our Holistic AI framework's generalizable properties and flexibility could offer a promising pathway for future multimodal predictive systems in various applications. Throughout their entire history, universities have been organized along distinct departments. I outline what I expect will be the impact of these developments on how universities will be organized in the following decades and how OR/MS can play a leading role.

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Time: 2:00 – 3:00 p.m. US Central Time
Location: 232 Wisenbaker Bldg (WEB)
Online: 998 4499 3279 (ID) & 724615 (PWD)
Faculty host: Yu Ding, TAMIDS

Biography

Dimitris Bertsimas is the Boeing Professor of Operations Research and the Associate Dean of Business Analytics at the Massachusetts Institute of Technology. He is a member of the US National Academy of Engineering, an INFORMS fellow, recipient of the John von Neumann Theory Prize, the Frederick W. Lanchester Prize, the Erlang Prize, finalist of the Franz Edelman Prize four times and the INFORMS President's Award, among many other research and teaching awards, supervisor of 88 completed and 25 current doctoral theses, editor of the INFORMS Journal on Optimization and co-founder of ten analytics companies and two foundations. He has co-authored more than 300 publications and seven graduate level books.

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