

Department of Mathematical Sciences
Faculty and Graduate Research Colloquium

“Learning Market Signals from Financial News Headlines Using Interpretable Machine Learning”

Dr. Jishan Ahmed

Weber State University

Tuesday, March 24

1:00-1:50 PM, RB 449 (via video link)

Abstract:

Financial markets react quickly to new information, and headlines often shape how investors interpret economic events. In this talk, a topic-modeling-based feature engineering approach is introduced by analyzing 292,196 Wall Street Journal news headlines for predicting S&P 500 direction. This feature engineering approach also incorporates sentiment analysis using pre-trained natural language process (NLP) models to extract features related to the U.S. Federal Reserve’s (Fed) monetary policy, trade tensions, and geopolitical risk. Model-agnostic feature importance analysis reveals that market volatility and financial sentiment are substantially more influential in driving market direction than headline topic counts alone. This analysis shows that NLP can provide transparent and interpretable insights into financial market dynamics.

From Ball State to Data Science: A Journey Through Academia, Finance, and AI

In the second half of this talk, Dr. Ahmed will share his journey from graduating at Ball State to working in data science. He will discuss experiences in academia and industry, including research on large language models, financial natural language processing, and agentic AI. Along the way, he will reflect on lessons learned in teaching and research, and share perspectives on the current data science job market and career opportunities for students in mathematics and statistics.