CalPolyPomona | College of Business Administration
Singelyn Graduate School of Business

The Power of Analytics Conference -
MS in Business Analytics Capstone Project Showcase
Saturday, August 2, 2025
Singelyn Graduate School of Business
Cal Poly Pomona

Brief Agenda

8:00-8:50 a.m.
Breakfast and check in
Location: Bldg. 163-RM 1029
8:50-9:00 a.m.
Welcome speech – Dean Krishnamurthy
Location: Bldg. 163-RM 1029
9:50-10:30 a.m.
Track A1-Artificial Intelligence Business Applications I
Location: Bldg. 163-RM 1029
Track B1-Improving Business Performance with Data I
Location: Bldg. 163-RM 1015
10:30-11:00 a.m.
Coffee Break & Networking
Location: Bldg. 163-RM 1029
11:00 a.m.-12:30 p.m.
Track A2-Artificial Intelligence Business Applications II
Location: Bldg. 163-RM 1029
Track B2-Improving Business Performance with Data II
Location: Bldg. 163-RM 1015
12:30-1:30 p.m.
Participants Lunch Break & Networking
Location: Bldg. 163-RM 1029
Judge Panel Lunch Break
Location: Bldg. 163-RM 1029
1:30-2:00 p.m.
Awards & Networking
Location: Bldg. 163-RM 1029
2:00-2:10 p.m.
Concluding Remarks – Dr. Yuanjie He, MSBA Program Co-Director
2:15 p.m.
Event Conclusion

Extended Agenda

Track A1: Artificial Intelligence Business Applications I

9:00-10:30 a.m.
Location: Bldg. 163-RM 1029

9:00-9:30 a.m.
AI-Driven Improvements in Patient-Doctor Communication for Remote Consultations (S1)

9:30-10:00 a.m.
Enhancing Live Chat Sales Closing Tactics in Business-to-Consumer Negotiations (S2)

10:00-10:30 a.m.
Enhancing Airbnb Customer Experience and Operations Using ML and Generative AI (S3)

Track A2: Artificial Intelligence Business Applications II

11:00 a.m.-12:30 p.m.
Location: Bldg. 163-RM 1029

11:00-11:30 a.m.
Solarscope: Advanced Analytics for Community-Focused Solar Energy Development (S4)

11:30 a.m.-12:00 p.m.
Financial News Sentiment Analysis Using AI (S5)

12:00-12:30 p.m.
E-Commerce Analytics: Enhancing Customer Satisfaction and Operational Efficiency through Advanced Analytics (S6)

Track B1: Improving Business Performance with Data I

9:00-10:30 a.m.
Location: Bldg. 163-Rm 1015

9:00-9:30 a.m.
How Minority-Owned Businesses on Yelp Stay Visible and Strong (S7)

9:30-10:00 a.m.
Critical Analysis of SMOTE in Bankruptcy Prediction (S8)

10:00-10:30 a.m.
Comparative Industry Analysis of IT and R&D Spending and Its Impact on Firm Profitability (S9)

Track B2: Improving Business Performance with Data II
11:00 a.m.-12:30 p.m.
Location: Bldg. 163-Rm 1015

11:00-11:30 a.m.
Workflow Optimization and Digital Modernization: A Strategic Analysis for Atlas Testing Laboratories, Inc. (S10)

11:30 a.m.-12:00 p.m.
Mapping Risk and Public Sentiment: Business Insights from Reddit During the Israel-Palestine Conflict (S11)

12:30 p.m.-1:30 p.m.
Participants Lunch Break & Networking
Location: Bldg. 163-RM 1029
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1:30-2:00 p.m.
Awards & Networking
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2:00-2:10 p.m.
Concluding Remarks – Dr. Yuanjie He, MSBA Program Co-Director

2:15 p.m.
Event Conclusion

Abstracts

Track A1: Artificial Intelligence Business Applications I

9:00-10:30 a.m.
Location: Bldg. 163-RM 1029

9:00-9:30 a.m.

AI-Driven Improvements in Patient-Doctor Communication for Remote Consultations (S1)

Student Presenters:
Rishabh Aji, Yu-Hsi Chou; Md Mahmoudul Hasan, Chenwei Kao, Lisa Luiten, YuanJr Yang

Faculty Co-Leads:
Dr. Mehrdad Koohikamali, Dr. Nastaran Simarasl

Abstract:
This research examined how AI-powered chatbots enhance patient-doctor communication during online consultations. Rapid telehealth adoption, due to the global pandemic, and AI communication usage, has raised concerns about the effectiveness of medical-chatbots. Using a multi-method approach, this study analyzed over 100 research articles, 92,000 mobile-app reviews, 110,000 real patient-doctor conversations, and 5,000 AI-generated responses. Multiple text analytics methods were applied, including transformer-based summarization, topic modeling using LDA, named entity recognition with BERT, sentiment analysis, and keyword matching with zero-shot classification. Topic modeling revealed communication challenges in chatbot interactions, including ambiguity, limited empathy, and gaps in users' digital literacy. Sentiment and keyword analysis highlighted low user trust and technical limitations. Transformer-based models produced more human-friendly summaries, while traditional models were more precise. NLP models, however, struggled to accurately diagnose conditions based on patient-reported symptoms. These findings offer practical insights for developers and healthcare companies seeking to implement effective AI tools.

9:30-10:00 a.m.

Enhancing Live Chat Sales Closing Techniques in Business-to-Consumer Negotiations (S2)

Student Presenters:
Jorge Aguilar, Yi Lin (Iris) Liang, Alex Lira, Ivy Plaza

Faculty Co-Leads:
Dr. Yufan Lin, Dr. Nastaran Simarasl

Abstract:
Many businesses struggle to identify which live chat techniques successfully close sales. In our research, we analyzed 1,000 sales conversations between sales agents and customers from a 2017 Fortune 500 retailer. Using AI (ChatGPT, DeepSeek), we developed and tested a classification model that identified negotiation tactics (concessions, value confirmation, bargaining) with 80% accuracy. To support these findings, we conducted controlled simulations with 200 distinct customer personas, systematically testing how different tactic combinations influence customer decisions. Our results showed that combining delay with concession had a positive effect on sales

success rate compared to other individual or combined tactics, nearly doubling the purchase rate. Delay tactics, such as "Let me check with my manager" made offers appear more valuable. These findings yield three clear action points: always lead with discounts, incorporate brief response delays, and separate discount offers from product value explanations. These AI-driven insights support optimization in live chat performance.

10:00-10:30 a.m.

Enhancing Airbnb Customer Experience and Operations Using ML and Generative AI (S3)

Student Presenters:
Manish Ashok, Poorvika Nataraj, Nidhi Pathak, Prem Sai Pullamchetty, Suneet Thakur

Faculty Co-Leads:
Dr. Sonya Zhang, Dr. Kelly Min

Abstract:
Airbnb hosts face the challenge of making sense of over a million unstructured guest reviews, limiting their ability to understand customer preferences and improve service. This project aims to extract key themes, sentiment, and insights from 1.7M+ Airbnb reviews using advanced machine learning and natural language processing techniques. We applied topic modeling algorithms like LDA, NMF, and BERTopic to identify high-impact themes such as cleanliness, location, and communication. Sentiment analysis was conducted using VADER, TextBlob, and DistilBERT to classify guest experiences and highlight satisfaction drivers. We then integrated these results into a generative AI pipeline using LLaMA, T5, and ChatGPT to summarize guest feedback into actionable insights for hosts. The outcome was a scalable review summarization framework that enhances listing-level decision-making and guest engagement. This project demonstrates how combining structured analysis with large language models can transform unstructured data into operational improvements for the hospitality sector.

Track A2: Artificial Intelligence Business Applications II

11:00 a.m.-12:30 p.m.
Location: Bldg. 163-RM 1029

11:00-11:30 a.m.

Solarscope: Advanced Analytics for Community-Focused Solar Energy Development (S4)

Student Presenters:
Sai Nitish Danapala, Nitish Kumar Guddeti, Venkata Pradeep Kantiboyina, Muhammad Mustafa, Nivetha Ramasamy, Jayaram Srinivasan

Faculty Co-Leads:
Dr. Mehrdad Koohikamali, Dr. Nastaran Simarasl

Abstract:
Delays and lower project acceptance continue to challenge solar energy development. Identifying stakeholder sentiment, regulatory barriers, and regional variations early remains critical. This project explores three questions: Can NLP methods accurately identify public sentiment and regulatory concerns? What regional differences exist in attitudes toward solar projects? How can insights from Large Language Models (LLMs) improve solar planning? Using 1,300+ documents—including 100 industry reports, 35 zoning regulations, 135 transcripts from public

meetings in Southampton and Halifax counties (VA), 1,138 Reddit comments, and 50 audio recordings from Howard County (MD)—we applied BERTopic modeling, RoBERTa sentiment analysis, and audio-text emotion detection, achieving 96% entity-recognition accuracy. Findings revealed 72% negative sentiment in public meetings, regional differences in community attitudes, and regulatory misalignments affecting permitting. These insights supported a BI dashboard and GenAI-powered RAG tool to proactively manage community concerns, streamline permitting, and accelerate solar project timelines.

11:30 a.m.-12:00 p.m.

Financial News Sentiment Analysis Using AI (S5)

Student Presenters:
Ailien Dang, An Vu, Cece Nguyen, Kiet Nguyen, Ngoc (Alice) Nguyen, Ngoc (Kim) Nguyen

Faculty Co-Leads:
Dr. Ken Zhang, Dr. Kelly Min

Abstract:
This project addresses the challenge of predicting stock price movements by analyzing the sentiment of financial news headlines. In today's fast-paced markets, the ability to interpret headlines quickly and accurately offers investors a strategic edge. Our objective was to evaluate whether sentiment extracted from news articles could improve short-term price forecasting across industries. We applied Natural Language Processing (NLP) techniques using three sentiment analysis models—TextBlob, BERT, and FinBERT on 2018 stock news headlines. The sentiment scores were then used as inputs to a Long Short-Term Memory (LSTM) model to forecast stock price changes. FinBERT, a model pretrained on financial texts, showed superior predictive accuracy over general-purpose tools. It consistently outperformed the others in five of six sectors studied: Technology, Real Estate, Healthcare, Energy, and Finance. In the Entertainment sector, however, the industry-specific fine-tuned model performed better, highlighting that in domains with unique language styles, customization adds value. These results suggest that domain-specific NLP models can enhance financial forecasting, making them valuable tools for analysts seeking to incorporate unstructured data into decision-making processes.

12:00-12:30 p.m.

E-Commerce Analytics: Enhancing Customer Satisfaction and Operational Efficiency through Advanced Analytics (S6)

Student Presenters:
Anil Kumar Devaguptapu, Yasaman Khodadadi, Anastasia Kuo, Juan Quinones, Fabian Ramirez, Khiem Truong

Faculty Co-Leads:
Dr. Mohammad Salehan, Dr. Kelly Min

Abstract:
In the competitive landscape of online retail, optimizing customer experience and improving operational efficiency are essential. This project investigates how advanced analytics techniques can support key functions of e-commerce using the Olist, a Brazilian company, dataset. The analysis focuses on six main objectives: predicting delivery delays, analyzing customer feedback, developing personalized product and seller recommendations, enabling automated customer support, and forecasting demand. Techniques such as XGBoost, sentiment analysis (VADER),

topic modeling (LDA, BERTopic), and collaborative filtering were applied to develop tailored models for each objective. The delivery delay model demonstrated high recall, enabling early identification of at-risk orders. Recommendation systems aligned seller offerings with customer interest, while feedback analysis uncovered recurring themes in reviews. These solutions provide a comprehensive, data-driven framework for enhancing satisfaction, reducing inefficiencies, and supporting smarter decisions in multi-vendor e-commerce environments. The project highlights the potential of analytics in driving measurable improvements in marketplace performance.

Track B1: Improving Business Performance with Data I

9:00-10:30 a.m.
Location: Bldg. 163-Rm 1015

9:00-9:30 a.m.

How Minority-Owned Businesses on Yelp Stay Visible and Strong (S7)

Student Presenters:
Hsu Aung, David Bohl, Ashley Judge, Bailey Virgo, Andrew Welch

Faculty Co-Leads:
Dr. Alireza Yazdani; Dr. Kelly Min

Abstract:
Minority-owned businesses are vital to local economies but face persistent challenges in digital visibility, resilience, and long-term success. This project integrates Yelp's open dataset with external government records to classify minority-owned businesses and analyze their performance. Using business categories, review topics, and sentiment, we were able to correctly predict minority ownership eight out of ten times. We then applied machine learning, sentiment analysis, and topic modeling to uncover engagement patterns, customer perceptions, and success factors. Our results indicate that review frequency, star ratings, and sentiment trends are strong predictors of business resilience and success, while ownership status and location influence visibility. By leveraging our insights around customer feedback and digital engagement, combined with the ability to predict minority ownership, this research offers scalable tools and insights for digital platforms, researchers, policymakers, and small business entrepreneurs.

9:30-10:00 a.m.

Critical Analysis of SMOTE in Bankruptcy Prediction (S8)

Student Presenters:
Andre Abramian, Brian Bai, Mengying Ding, Aidan Gomez, Conan Leung, Diego Onofre-Rea, Shreya Seth

Faculty Co-Leads:
Dr. Shih-Tang Hwu, Dr. Kelly Min

Abstract:
Corporate bankruptcies are rare but critical events, making accurate predictions essential for financial stability. However, severe class imbalance between bankrupt and non-bankrupt firms limits traditional model effectiveness. This project addresses the question: How can Synthetic Minority Oversampling Technique (SMOTE) improve bankruptcy prediction performance when applied to machine learning models? Using financial data from over 6,800 Taiwanese companies, the project evaluated four models: logistic regression, elastic net, random forest, and neural

networks. Asset efficiency, liquidity, profitability, and leverage metrics emerged as significant predictors. Results highlight both the benefits of improved minority class representation, with many models achieving over 90% accuracy, and potential risks that SMOTE might pose in ethical research. The findings provide practical insights into balancing imbalanced datasets and selecting appropriate modeling techniques for financial distress prediction.

10:00-10:30 a.m.

Comparative Industry Analysis of IT and R&D Spending and Its Impact on Firm Profitability (S9)

Student Presenters:
Xuexin (Kristix) Chen, Eric Hsu, Carlos Ibarra, Lishin (Leo) Shiu, Rachna Singh

Faculty Co-Leads:
Dr. Weijun Zheng, Dr. Nastaran Simarasl

Abstract:
In fast-evolving economies, firms invest in Information Technology (IT) and Research & Development (R&D) to drive growth and maintain competitiveness. Do these investments improve performance, or is it industry dependent? This project investigated whether IT and R&D spending improved profitability and how their effects varied across industries. It examines if these investments yield uniform returns or depend on sector dynamics. Using a multi-year panel of U.S. firms, the study explored the relationship between IT and R&D intensity and Return on Assets (ROA), applying industry-level regression models with controls for firm size and sector characteristics. Findings showed mixed effects of R&D spending, with some industries seeing gains and others experiencing neutral or negative impacts. IT investment showed no clear positive trend, and in some industries, a significant negative association with performance was observed. These insights highlight the need for sector-specific investment strategies.

Track B2: Improving Business Performance with Data II

11:00 a.m.-12:30 p.m.
Location: Bldg. 163-Rm 1015

11:00-11:30 a.m.

Workflow Optimization and Digital Modernization: A Strategic Analysis for Atlas Testing Laboratories, Inc. (S10)

Student Presenters:
Radhika Agrawal, Kyle Cohen, Thanh Ha, Dara Iranzadi, Eduardo Rivas, Jay Toney

Faculty Co-Leads:
Dr. Alireza Yazdani, Dr. Kelly Min

Abstract:
Our client is a medium-sized metallurgical testing laboratory in Southern California. A lack of formal data infrastructure and overreliance on pen-and-paper order tracking methods prevents them from consistently meeting customer deadlines. We collected unstructured, siloed data from the client and developed a modern relational database, enabling us to create a practical decision support system. Our analysis extracted end-user market insights for growth targeting and macroeconomic material volume forecasts for capacity planning, allowing the client to react

flexibly to market dynamics. We also derived internal business insights generating tiered customer segments and department-level revenue forecasts. These insights are monitored through our live dashboard, providing the client with an operational bird's-eye view. We addressed turnaround time through Monte Carlo simulation of the client's machine shop, prescribing optimal dispatch rules to minimize order lateness. Our client clearly needs to adopt this modern data-driven strategy to maintain competitiveness and combat dwindling customer loyalty.

11:30 a.m.-12:00 p.m.

Mapping Risk and Public Sentiment: Business Insights from Reddit During the Israel-Palestine Conflict (S11)

Student Presenters:
Kerry Che, Yunfeng Fan, Pratik Kumar, Nhat Le, Cedric Wong; Elly Yang

Faculty Co-Leads:
Dr. Mohamed Gomaa, Dr. Nastaran Simarasl

Abstract:
This project explores how online conversations respond to geopolitical conflict and corporate involvement. Centered on the Israel-Palestine conflict, we analyzed Reddit discussions alongside data from Armed Conflict Location and Event Data (ACLED) and stock market trends to examine the relationship between public sentiment, violent events, and business outcomes. Using tools like natural language processing, topic modeling, time-lag analysis, and machine learning, we tracked shifts in engagement and emotional tone. Our analysis found that certain types of violence, especially those involving civilians, led to noticeable changes in sentiment within one to three days and were often followed by increased mentions of company boycotts or criticism. While these sentiment shifts aligned with reputational concerns, their short-term impact on stock performance was limited. These findings suggest that real-time social media monitoring can offer early warning signals for brands navigating global crises and help researchers understand how digital platforms shape public reaction to conflict.