

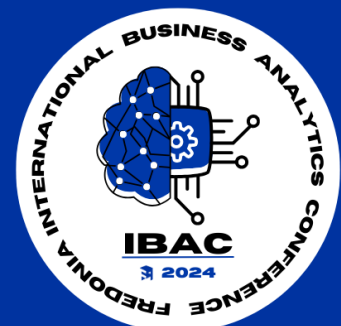


# International Business Analytics Conference for Academic and Industry Professionals 2024

**Fredonia, New York**

Friday – Saturday, May 3 - 4

**Conference Website: [www.fredonia.edu/ibac](http://www.fredonia.edu/ibac)  
Conference Email: [ibac@fredonia.edu](mailto:ibac@fredonia.edu)**



# Fastenal

Fastenal, a global leader in industrial and construction supplies, excels in providing unparalleled solutions for businesses of all sizes. With a vast inventory of over 1 million products, including fasteners, safety equipment, tools, and more, Fastenal ensures customers have access to quality goods when and where they need them.



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M&T Bank is proud to support SUNY Fredonia International Business Analytics Conference .

**M&T**Bank

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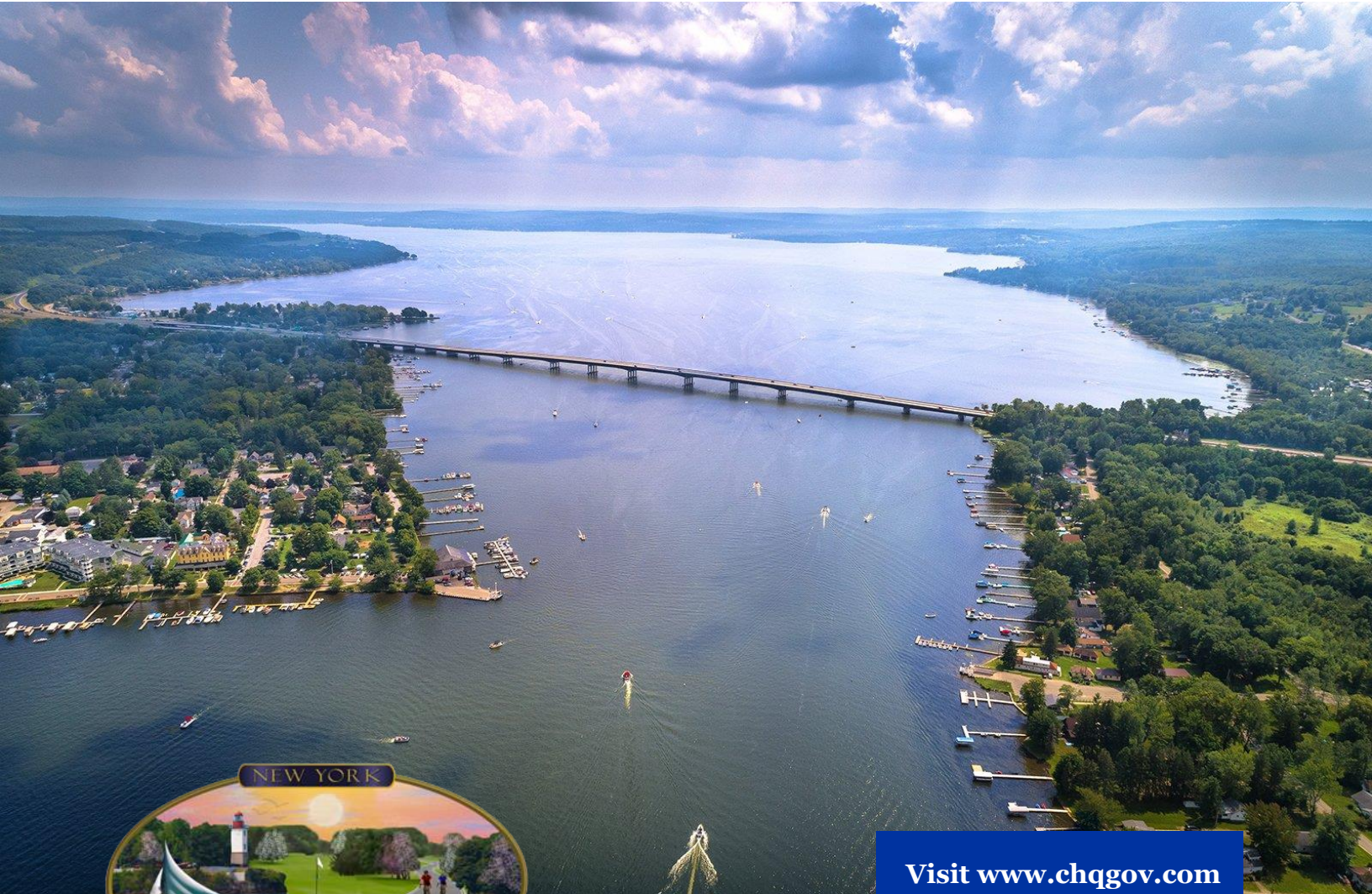


# Chautauqua County

Chautauqua County is supporting the International Business Analytics Conference through a tourism grant designed to “increase tourism, conventions, trade shows, special events, and other directly related or supporting activities.”

The County supports the "development of distinct themes or significant events and attractions that enhance the level of visitor experience," and ultimately the number of visitors to the County.

We thank Chautauqua County leaders for supporting this inaugural event.



Visit [www.chqgov.com](http://www.chqgov.com)  
for more information  
on local attractions!



# State University of New York at Fredonia

Founded in 1826, The State University of New York at Fredonia is one of the jewels of the SUNY system, known for its welcoming atmosphere, distinguished faculty, and beautiful campus. With affordable tuition and housing in a classic "college town," the State University of New York at Fredonia gives students the academic challenges of a selective university committed to developing their character and preparing them for a rewarding career.

Fredonia offers a complete college experience -- a "destination university" in a creative environment that is diverse, welcoming, and safe. It helps students become uniquely connected to classmates, professors, and the community. The vibrant campus features comfortable residence halls, delicious dining options, and an abundance of extracurricular options to keep your evenings and weekends as stimulating as your daily studies.

Fredonia has over 80 undergraduate and graduate programs, along with 50+ minors and 13 cooperative programs, designed to help students reach their full potential. Fredonia's 14:1 student faculty ratio provides the personal attention students expect in a small private school, delivered at a public college ranked by national publications like Money magazine, Princeton Review, Kiplinger's, and U.S. News & World Reporter for quality and affordability.



Visit [www.fredonia.edu](http://www.fredonia.edu)  
for more information!

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# Welcome Letter

A warm welcome to the Inaugural International Business Analytics Conference 2024. We are thrilled to have you join us for this exciting event, where innovation, inspiration and connection meet. Analytics is becoming an integral part of our daily lives and regardless of your discipline, you are using analytics to make decisions. This conference is designed to bring academic scholars and industry practitioners from various fields together in an effort to bridge the gap in analytics. Our program is packed with keynote talks from industry leaders, interactive fireside chats, round table and panel discussions along with concurrent sessions. Our goal is to create a dynamic and engaging experience for all attendees while making valuable connections. This conference is significantly supported by donors, sponsorships, and a grant. We are grateful to your generous support.

Over the next two days we will engage, learn, share, educate and most importantly have fun. We look forward to seeing you at this inaugural International Business Analytics Conference on Friday, May 3rd and Saturday, May 4th. Please feel free to connect with us if you have any questions regarding this conference.

Best Regards,



Kaustav Misra  
Dean, School of Business  
Professor for Economics  
State University of New York Fredonia  
[misra@fredonia.edu](mailto:misra@fredonia.edu)





# Conference at a Glance

The International Business Analytics Conference (IBAC) is pleased to announce its inaugural conference, hosted at SUNY Fredonia on Friday-Saturday, May 3-4, 2024. IBAC 2024 provides a unique platform that bridges the gap between academic and industry expertise in the field of business/data analytics through Academia-Industry Partnership. By bringing together industry practitioners and academicians, the conference facilitates meaningful discussions and foster collaboration in the ever-evolving world of business analytics. The IBAC 2024 conference welcomed submissions on a wide range of topics related to research and current industry use of business or data analytics, focusing on but not limited to the fields of Accounting, Business and Management, Computer Science/Management Information Systems, Economics, Finance and Insurance, Education, Healthcare, Marketing, Music and Entertainment, and Sport Management.

For example, submission specifically addressed research or current business practices in:

- Data-driven decision-making
- Predictive and prescriptive analytics
- Artificial Intelligence and Machine Learning in business
- Big data analytics and its applications
- Business Intelligence and data visualization
- Data mining and pattern recognition
- Text and sentiment analysis in business
- Supply chain analytics and logistics optimization
- Marketing and customer analytics
- Risk management and fraud detection
- Ethics and privacy in business analysis

## Conference Committee Members

### Organizing Committee

#### **Conference Chair:**

Kaustav Misra (Dean, School of Business)

#### **Organizing Committee Chairs:**

##### **Program Chair (Academic):**

Mark Nickerson

(School of Business - Accounting)

Justin Mindzak

(School of Business - Accounting)

##### **Program Chair (Industry):**

Charles Cornell (Center for Innovation and Economic Development)

Lisa Walters (School of Business - Management)

**Ad-hoc Members:** Syed Haider (Computer and Information Sciences), Adam Cook (Economics)

### **Administrative Support:**

Robyn Reger and Kristie Bobik  
(School of Business)

### Program Committee

#### **Publicity Chair:**

Cara Lanning (CIED)

#### **Finance Chairs:**

Linda Hall (School of Business - Accounting) and  
Neepa Gaekwad Babulal (School of Business - Economics)

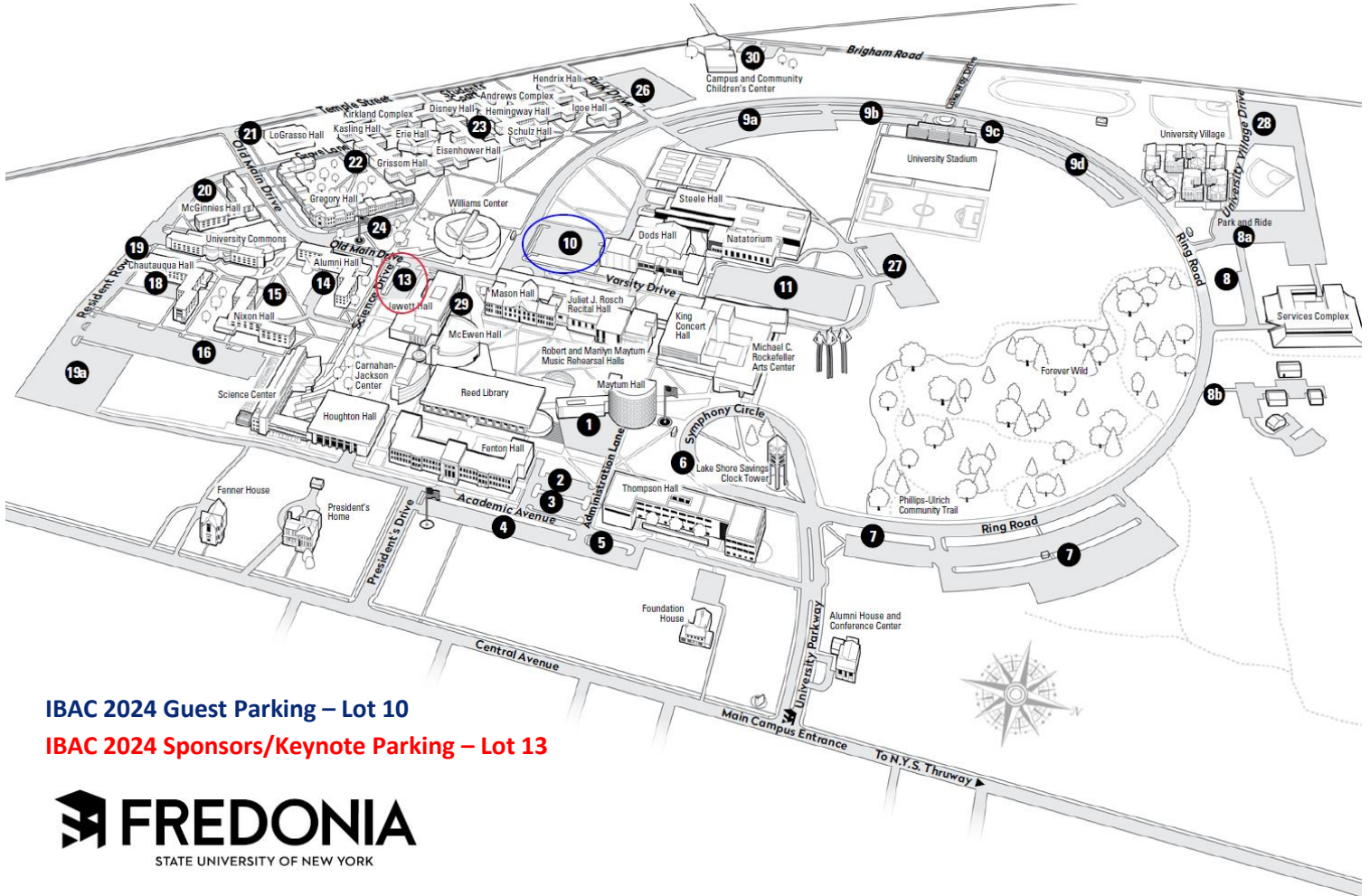
#### **Event Management:**

Lauri Gawronski (CIED), Mark Delcamp (Facilities Services), Jeff Walter and Katie Thies (FSA), Mark Suida (Campus Life), John McCune (Information Technology), Scott Saunders (Registrar), Kathy Forster (Residence Life) and Tim Murphy (College Foundation)



# Conference Maps

## Designated Parking:



**IBAC 2024 Guest Parking – Lot 10**

**IBAC 2024 Sponsors/Keynote Parking – Lot 13**



# Campus Map



**FREDONIA**  
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Park and Ride Bus Stop  
 Parking

## ACADEMIC AND ADMINISTRATIVE

- |   |   |  |   |
|---|---|--|---|
| <ul style="list-style-type: none"> <li><b>2 Lanford House</b></li> <li><b>3 Foundation House</b><br/>Fredonia College Foundation</li> <li><b>4 Alumni House and Conference Center</b></li> <li><b>5 Thompson Hall</b><br/>College of Education, Health Sciences, and Human Services<br/>Communication Disorders and Sciences<br/>History<br/>Information Technology Services and Service Center<br/>International Education<br/>ResNet<br/>School of Business<br/>Social Sciences</li> <li><b>6 Fenton Hall</b><br/>English<br/>Extended Learning<br/>World Languages and Cultures<br/>Philosophy<br/>President's Office</li> <li><b>7 Houghton Hall</b><br/>Computer and Information Sciences<br/>Geosciences</li> </ul> | <ul style="list-style-type: none"> <li>Mathematical Sciences<br/>Physics</li> <li><b>8 Science Center</b><br/>Biology<br/>Biochemistry and Chemistry</li> <li><b>9 Carnahan-Jackson Center</b><br/>Learning Center</li> <li><b>10 Reed Library</b><br/>Academic Advising<br/>Registrar's Office</li> <li><b>11 Maytum Hall</b><br/>Academic Affairs<br/>Accounting/Accounts Payable<br/>Admissions Office<br/>Budget<br/>Computing Center<br/>Finance and Administration<br/>Financial Aid<br/>Human Resources<br/>Internal Control<br/>Mail Services<br/>New Student &amp; Transitions Office<br/>Payroll<br/>Property Control<br/>Purchasing<br/>Student Affairs<br/>University Services</li> </ul> | <ul style="list-style-type: none"> <li><b>12 McEwen Hall</b><br/>Communication<br/>Fredonia Radio Systems</li> <li><b>13 Jewett Hall</b></li> <li><b>14 Mason Hall</b><br/>School of Music</li> <li><b>15 Juliet J. Rosch Recital Hall</b></li> <li><b>16 Robert and Marilyn Maytum Music Rehearsal Halls</b></li> <li><b>17 King Concert Hall</b></li> <li><b>18 Michael C. Rockefeller Arts Center</b><br/>Theatre and Dance<br/>Visual Arts and New Media</li> <li><b>19 Dods Hall</b><br/>Athletics and Recreation</li> <li><b>20 Steele Hall</b></li> <li><b>21 Natatorium</b></li> <li><b>22 Williams Center</b><br/>Blue Devil Den<br/>Blue Lounge<br/>Campus Life Office<br/>Credit Union<br/>Horizon Room<br/>Intercultural Center<br/>Ticket Office</li> </ul> | <ul style="list-style-type: none"> <li>Welcome Center and Campus Tours<br/>Willy C's Dining</li> <li><b>23 University Commons</b><br/>Bookstore<br/>Convenience Store<br/>Cranston Marché<br/>Starbucks Coffee</li> <li><b>24 LoGrasso Hall</b><br/>Counseling Center<br/>Health Center</li> <li><b>26 Campus and Community Children's Center</b></li> <li><b>27 University Stadium</b></li> <li><b>28 Park and Ride</b></li> <li><b>30 Services Complex</b><br/>Central Receiving<br/>Facilities Services<br/>FSA Commissary<br/>Garage<br/>Grounds<br/>Maintenance Vehicles</li> <li><b>31 Lake Shore Savings Clock Tower and Carillon</b></li> </ul> |
|---|---|--|---|

## RESIDENTIAL

- |  |  |   |  |
|--|--|---|--|
| <ul style="list-style-type: none"> <li><b>25 Erie Hall</b></li> <li><b>32 Nixon Hall</b> Residence</li> <li><b>33 Chautauqua Hall</b> Residence</li> <li><b>34 McGinnies Hall</b> Residence</li> <li><b>35 University Commons</b> Residence</li> <li><b>36 Alumni Hall</b> Residence</li> <li><b>37 Gregory Hall</b> Residence<br/>Career Development<br/>Faculty Student Association</li> </ul> | <ul style="list-style-type: none"> <li>Marketing and Communications<br/>Residence Life<br/>University Police</li> <li><b>38 Kasling Hall</b> Residence</li> <li><b>39 Grissom Hall</b> Residence</li> <li><b>40 Kirkland Complex</b> Residence</li> <li><b>41 Disney Hall</b> Residence</li> <li><b>42 Eisenhower Hall</b> Residence</li> <li><b>43 Schulz Hall</b> Residence</li> </ul> | <ul style="list-style-type: none"> <li><b>44 Hemingway Hall</b> Residence</li> <li><b>45 Andrews Complex</b> Residence</li> <li><b>46 Hendrix Hall</b> Residence<br/>WNYF-TV<br/>Environmental Health and Safety and Sustainability<br/>Facilities Planning</li> <li><b>47 Igoe Hall</b> Residence<br/>Photography Lab</li> </ul> | <ul style="list-style-type: none"> <li><b>48 Village Center</b></li> <li><b>49 Pioneer</b> Residence</li> <li><b>50 Zoar</b> Residence</li> <li><b>51 Barcelona</b> Residence</li> <li><b>52 Holland</b> Residence</li> <li><b>53 Niagara</b> Residence</li> <li><b>54 Letchworth</b> Residence</li> <li><b>55 University Village</b> Residence</li> </ul> |
|--|--|---|--|



# Williams Center



## IBAC Wifi login credentials:

**User id:** FREDbound

**Password:** experiencefred

Please note you will be connected to eduroam seamlessly if you are from an eduroam enable campus.





# Hotel and Transportation Information

## Clarion Hotel Conference Center on Lake Erie:

Address: 30 Lake Shore Drive East, Dunkirk, NY, 14048, US

Phone: 716-366-8350 or 1-800-525-8350

Clarion Hotel & Conference Center in Dunkirk offers wonderful views overlooking Lake Erie. Located approximately 24 miles from the Jamestown airport, and 45 miles from the Buffalo airport, the hotel & conference center is conveniently located for your getaway, special event or business meeting. The harbor-front boardwalk and the center of Dunkirk are a short walk away and offer dining, recreation and entertainment year-round. On-site, the hotel features a choice of lakeview rooms, city-side rooms, or suites with a whirlpool. To suit our guests' varied needs, this hotel offers room service, a guest laundry area, free newspapers, a 24-hour front desk, complimentary parking and in-room safes. Hotel guests are afforded an abundance of amenities, like free hot breakfast bar, free high-speed Internet access, free local calls and free coffee. We have a seasonal heated outdoor pool and exercise room with cardio equipment and universal weight machine. Traveling through Buffalo? Visit our sister hotel, the Quality Inn - Buffalo Airport, featuring 107 guest rooms, WI-FI internet, fitness room and special Park & Fly Rates!

## Steelbound Brewery & Distillery:

Address: 30 Lake Shore Drive East, Dunkirk, NY, 14048, US

Phone: 716-366-7701

## Bus Transportation:

A special bus will be running between Hotel Clarion and the Fredonia Campus.

Day	Date	From Hotel to Campus	From Campus to Hotel
Friday	May 3rd, 2024	7:45 A.M., 8:15 A.M., 12:00 P.M.12:30 P.M.	4:30 P.M., 5:00 P.M.
Saturday	May 4th, 2024	7:45 A.M., 8:15 A.M.	2:00 P.M., 2:30 P.M.

Please check with the front desk manager at the Clarion Hotel for rides and more information.

**Phone a friend for help during your stay:** Kaustav Misra (662-312-0005 or [misra@fredonia.edu](mailto:misra@fredonia.edu)) or Charles Cornell ([cornell@fredonia.edu](mailto:cornell@fredonia.edu))

# Conference Itinerary

Friday, May 3 <sup>rd</sup>		
8:00 a.m. - 12:00 p.m.	Registration & Information	MPR, Williams Center
8:00 a.m. - 9:00 a.m.	General Breakfast & Conference Inauguration Ceremony: President Kolison and Provost Starrett	MPR, WC
9:00 a.m. - 9:10 a.m.	Plenary Session: Greetings from President Stephen Kolison	MPR, WC
9:10 a.m. - 9:20 a.m.	Plenary Session: Greetings from Provost David A. Starrett	MPR, WC
9:30 a.m. - 10:50 a.m.	<b>Concurrent Sessions</b>	Williams Center
	Track 1: Machine Learning and Management	WC G103A
	Track 2: Applied Economics	WC G103B
	Track 3: Accounting and Auditing	WC G103C
	Track 4: Analytics in Business Education	WC S204A (Second Floor)
10:50 a.m. - 11:00 a.m.	Coffee Break	MPR, WC
11:00 a.m. - 12:30 p.m.	Round Table Discussion - Fastenal	MPR, WC
12:30 p.m. - 2:00 p.m.	Lunch	MPR, WC
1:00 p.m. - 2:00 p.m.	Keynote Speaker 1: Conversation with Karl Holz	MPR, WC
2:00 p.m. - 3:20 p.m.	<b>Concurrent Sessions</b>	Williams Center
	Track 5: Insights into Financial Markets	WC G103A
	Track 6: Student Research Projects	WC G103B
	Track 7: Advanced Business Analytics	WC G103C
	Track 8: Industry Insights	WC S204A (Second Floor)
3:20 p.m. - 3:30 p.m.	Coffee Break	MPR, WC
3:30 p.m. - 4:15 p.m.	Presentation by Cengage	MPR, WC
4:15 p.m. - 5:15 p.m.	<b>Depart from MPR to Clarion Hotel and BREAK</b>	
5:15 p.m. - 6:15 p.m.	Reception and Networking with Smooth Jazz	Clarion Hotel
6:15 p.m. - 7:15 p.m.	Dinner	Clarion Hotel
7:15 p.m. - 8:15 p.m.	Keynote Speaker 2: Linda Powell	Clarion Hotel
Saturday, May 4 <sup>th</sup>		
8:00 a.m. - 9:30 a.m.	Registration & Breakfast	MPR, WC
8:30 a.m. - 9:15 a.m.	Panel Discussion - Bridging the Gap	MPR, WC
9:30 a.m. - 10:50 a.m.	<b>Concurrent Sessions</b>	Williams Center
	Track 9: Applied Economics 2	WC G103A
	Track 10: Operational Strategies	WC G103B
	Track 11: Insights and Innovations in analytics	WC G103C
	Track 12: Management and Education	WC S204A (Second Floor)
10:50 a.m. - 11:00 a.m.	Coffee Break	MPR
11:00 a.m. - 12:00 p.m.	Fireside Chat with Dr. Ernest Fokoue	MPR, WC
12:00 p.m. - 1:30 p.m.	Lunch	MPR, WC
12:30 p.m. - 1:30 p.m.	Keynote Speaker 3: Chris Seferlis	MPR, WC
1:30 p.m. - 2:00 p.m.	Award Distribution and Concluding Remarks by Kaustav Misra	MPR, WC
2:30 p.m.	<b>Depart from Campus!</b>	

\*\*\* MPR - Multipurpose Room, WC - Williams Center \*\*\*



# General Information

**Conference Registration** – Registration will be held in the Multipurpose Room (MPR) of the Williams Center, starting each day at 8:00am.

**Badges** – All conference registrants will receive a personalized badge when they check in at the registration desk. Please wear your badge at all times since will be checked at all sessions, meal functions and events. If you misplace your badge, please come to the registration desk for a replacement.

## Connect with Us!

Annual Conference Website: <https://www.fredonia.edu/ibac>

Find the School of Business on Social Media!

- Facebook: <https://www.facebook.com/FredoniaSchoolofBusiness>
- Twitter: <https://twitter.com/FredBusAdmin>
- LinkedIn: <https://www.linkedin.com/in/fredonia-school-of-business-412106164/>

## Special Assistance

### Accessible Entrances Map

SUNY Fredonia is committed to making its entire campus accessible to all individuals, including those with disabilities. For further information regarding special needs, or if you have previously requested assistance for this conference, please visit the registration desk.

## Copyright Notice

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To safeguard the interests of our Conference presenters, the International Business Analytics Conference adheres to the principles of the [Creative Commons Attribution 4.0 License](#).

# Featured Speakers

## Friday, May 3, 2024: Luncheon Keynote Speaker - Karl Holz

Karl Holz earned his bachelor's degree in Business Administration, is the former President of Disney Cruise Line and New Vacation Operations. A 22-year veteran of the Walt Disney Company, Karl has deep expertise in building organizational culture, customer experience, operations, strategic planning, international business and start-up ventures. In 2004, he was appointed President and COO of Disneyland Resort Paris, and shortly thereafter, became Chairman and CEO. Currently, Karl is a Senior Advisor at McKinsey & Company. He is also a board member for CRUISE SAUDI, Radisson Hotel Group and the Pro Football Hall of Fame Village Resort. Karl serves SUNY Fredonia as a current member of the Fredonia College Foundation Board of Directors, and was the recipient of the Fredonia Alumni Association's Outstanding Achievement Award in 2005.



## Friday, May 3, 2024: Dinner Keynote Speaker - Linda Powell

Linda F. Powell is the Enterprise Head of Data Governance and Deputy Chief Data Officer at Bank of NY Mellon. She has over 20 years of experience in the finance industry including commercial banking, banking supervision, and supporting economic research. She spent most of her career with the Federal Reserve System. She was also the Chief Data Officer at the Treasury Department's Office of Financial Research and the Consumer Financial Protection Bureau. In 2018 she joined Citibank as the Global Head of Data Governance, Data Reporting, and End User Computing and joined Bank of NY Mellon in 2021. She has published several papers on the topics of data standards, metadata, and data strategy. She has a B.A. in Economics from Rutgers University and an M.S. in Quantitative Finance from George Washington University.



## Saturday, May 4, 2024: Luncheon Keynote Speaker - Chris Seferlis

Chris Seferlis is a Technology Strategist at Microsoft where for the past 4+ years he has helped customers bring their technical strategies to reality with a heavy focus on how they are using their data. He is also a Visiting Professor at Boston University in the School of Computing and Data Sciences, teaching with a mix of practical and experiential discussions. A former CIO with over 20 years' experience in IT and a deep background in Data Warehousing and Business Intelligence, Chris brings a practical and theoretical approach to business technology challenges using a data driven mindset. Chris holds an MBA from the University of Massachusetts, is a Microsoft Certified Trainer, and recently completed the book A Practical Guide to Azure Cognitive Services and OpenAI - Leverage the power of AI to optimize operations, reduce costs, and deliver cutting-edge AI solutions.



# Plenary Sessions: Panel Discussions, Fireside Chat and Roundtable

## Roundtable by Fastenal

**Friday, May 3rd, 2024 from 11:00am to 12:30pm**

**Title: The Application of Data Analytics in Decision Making**

**Panelists:** Ryan Scott – Regional Vice President, Mike Pluchino – Regional Finance Manager, Josh Rice - Lean Solutions Manager, Vince DeRosa – District Manager, and – Cody Enger – District Sales Specialist, Andrew – Bagley Recruiter

## Presentation by Cengage

**Friday, May 3rd, 2024 from 3:30pm to 4:15pm**

**Title: Unlock the power of data with Cengage's Business Analytics presentation on MindTap**

**Presenters:** Shannon Headley and Melinda Genter

Discover how our cutting-edge platform enhances student engagement, provides real-world scenarios, and fosters critical thinking skills. Boost student success and prepare them for a data-driven world. Don't miss out on this transformative learning experience!

## Panel Discussion

**Saturday, May 4th, 2024 from 8:30am to 9:15am**

**Title: Bridging the Gap Between Data Analytics Pedagogy and Industry Demands**

**Panelists:** Megan Johnson - Assistant Professor of Mathematics, Adam Cook -Associate Professor of Economics, Shahin Mehdipour Ataei – Assistant Professor of Computer Science, Emily Fay – M &T Senior Data Scientist, Rachel Hettenbaugh (M&T Business Analytics & Reporting), Anna Pierce (M&T Risk Analyst)

In the dynamic landscape of industry, the role of data analysis is pivotal. As educators, researchers, and practitioners, it's imperative to continually innovate our approaches to teaching and learning in this field. The primary objective of our panel discussion is to foster a collaborative dialogue among experts in data analytics education and industry practitioners. Through sharing experiences, methodologies, and case studies, we aim to elucidate effective strategies for enhancing data analytics pedagogy and ensuring graduates possess the requisite skills and competencies for the job market.

## Fireside Chat by Dr. Ernest Fokoue

**Saturday, May 4th, 2024 from 11:00am to 12:30pm**

**Title: Rediscovering the Quintessential Building Blocks of Effective Statistical Data Analysis**

The gist of this, or rather the spirit, is to provide the audience with a mini tour of some of the ubiquitous methods and techniques along with practices that have remained at the core of analytics, despite the thunder/barrage of fancy extensions parading as better.



# Sponsorships

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# BS&P

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We are proud to sponsor the 2024 International Business Analytics Conference at SUNY Fredonia. At BS&P, we are continually bringing in fresh perspectives through our Leadership program, internships and shadowing opportunities—creating a culture of growth and learning. Adding value to businesses, employees and the community—it's what we do.

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jcarrie@ma-adviser.com Fax: 716-484-4810

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# Conference Tracks

## Concurrent Sessions (Friday - 9:30am) Tracks 1-4

### Track 1: Machine Learning and Management

**Room:** WC G103A (9:30am -10:50am)

**Moderator:** **Gabby Resch** (*Ontario Tech University*)

#### 1.1 Customer Churn Prediction with Machine Learning

**Presented by:** **Bahareh Rahmani** (*Saint Louis University*)

**Co-authors:**

A. Maazallahi (*Saint Louis University*)

Y. M. Meda (*Saint Louis University*)

B. M. S. Bokka (*Saint Louis University*)

H. Jamallamudi (*Saint Louis University*)

P. Norouzzadeh (*Saint Louis University*)

E. Snir (*Washington University in Saint Louis*)

This article explores the prediction of customer churn in the banking sector using various machine learning models. It comprehensively analyzes extensive customer data, employing techniques including linear regression, decision trees, KNN, Naive Bayes, and Random Forest. The study emphasizes visual data interpretation through scatter plots, histograms, and box plots. It concludes with an assessment of ensemble methods, highlighting the superiority of Random Forest in predicting churn, offering crucial insights for customer retention strategies in banking.

#### 1.2 An Empirical Analysis of the Functionalities and Confidence Scoring Mechanisms in Leading Large Language Models

**Presented by:** **Mohammad Nasim** (*Northwood University*)

This research paper provides a comprehensive empirical analysis of the functionalities and confidence scoring mechanisms in leading large language models (LLMs) such as GPT, BERT, and others. The unprecedented capabilities of these models in understanding and generating human-like text have positioned them as central to advancing artificial intelligence and its applications across various domains. Despite their widespread use, there remains a significant gap in understanding the breadth of functionalities these models offer and how they quantify and communicate the confidence in their outputs. Through a methodical examination, this study aims to bridge this gap by assessing the range of tasks LLMs can perform—from text generation and summarization to question answering and sentiment analysis—and evaluating their mechanisms for confidence scoring, including softmax probabilities, Bayesian methods, ensemble techniques, and calibration approaches. The analysis is grounded on a robust research design involving benchmarking tasks, user studies, error analysis, and comparative studies across models. The findings not only shed light on the strengths and limitations of current LLM functionalities and confidence mechanisms but also offer insights into their practical implications for users and developers. By highlighting areas for improvement, this study contributes to enhancing the reliability, transparency, and user trust in LLMs, paving the way for more robust and accountable AI systems.

### **1.3 Incorporating a Machine Learning Model into a Web-Based Administrative Decision Support Tool for Predicting Workplace Absenteeism**

**Presented by: Soumik Banerjee** (*Canisius University*)

**Co-authors:**

Gopal Nath (*Murray State University*)

Yawei Wang (*Montclair State University*)

Austin Coursey (*Murray State University*)

Krishna K. Saha (*Central Connecticut State University*)

Productivity losses caused by absenteeism at work cost U.S. employers billions of dollars each year. In addition, employers typically spend a considerable amount of time managing employees who perform poorly. By using predictive analytics and machine learning algorithms, organizations can make better decisions, thereby increasing organizational productivity, reducing costs, and improving efficiency. Thus, in this paper we propose hybrid optimization methods in order to find the most parsimonious model for absenteeism classification. We utilized data from a Brazilian courier company. In order to categorize absenteeism classes, we preprocessed the data, selected the attributes via multiple methods, balanced the dataset using the synthetic minority over-sampling method, and then employed four methods of machine learning classification: Support Vector Machine (SVM), Multinomial Logistic Regression (MLR), Artificial Neural Network (ANN), and Random Forest (RF). We selected the best model based on several validation scores, and compared its performance against the existing model. Furthermore, project managers may lack experience in machine learning, or may not have the time to spend developing machine learning algorithms. Thus, we propose a web-based interactive tool supported by cognitive analytics management (CAM) theory. The web-based decision tool enables managers to make more informed decisions, and can be used without any prior knowledge of machine learning. Understanding absenteeism patterns can assist managers in revising policies or creating new arrangements to reduce absences in the workplace, financial losses, and the probability of economic insolvency.

### **Track 2: Applied Economics**

**Room:** WC G103B (9:30am -10:50am)

**Moderator: Rachid Belhachemi** (*Le Moyne College*)

#### **2.1 Textual Analysis of Beige Books to Predict Regional Economic Changes**

**Presented by: Charlie Smith** (*University of South Alabama*)

Beige Books, compiled by the Federal Reserve, contain anecdotal observations about current economic conditions from a diverse set of business leaders. This research uses natural language processing (NLP) to investigate the predictive potential of Beige Book sentiment on regional differences in the U.S. macroeconomy. The methodology involves the application of a random forest classifier to predict whether a Federal Reserve district experienced economic growth from the previous month based on multiple sentiment features, including mean and median sentiment scores, interquartile range, and sentiment near key trigrams. Validation techniques are employed to assess model robustness, and the results suggest Beige Books are able to make regional economic predictions substantially greater than the level of a guess, with the AUC score on a receiver operating characteristic curve equaling .746. Enhancements are proposed for future research through advanced sentiment analysis methodologies using large language models like GPT and BERT and by comparing predictions made by alternative machine learning algorithms.



## **2.2 The Demand for Money for EMU: A Flexible Functional Form Approach**

**Presented by:** Neepta Gaekwad Babulal (*State University of New York at Fredonia*)

**Co-author:** William Barnett (*University of Kansas*)

Monetary aggregates have a special role under the “two pillar strategy” of the ECB. Hence, the need for a theoretically consistent measure of monetary aggregates for economic union (like EU and EMU) is difficult to obliterate. This paper analyzes the monetary assets for EMU. Firstly, an aggregation is done for the monetary services for the economic union, EMU-11 countries, that is, Estonia, Finland, France, Germany, Ireland, Italy, Luxembourg, Malta, Netherlands, Slovakia, and Slovenia. The Divisia monetary aggregation approach (Barnett 1980, 2003, 2007) is adopted, which is consistent with the index number theory and microeconomic theory. For the first time in this paper a Multilateral Divisia monetary aggregate index is created. The multilateral Divisia monetary aggregate for EMU-11 is more informative and a good signal of the economic trends when compared to the corresponding simple sum aggregate. Secondly, the monetary assets for EMU-11 are analyzed in the framework of a representative consumer’s utility function, using the locally flexible functional form, the Minflex Laurent Indirect utility function (Barnett 1983). The analysis of the elasticities with respect to their user costs (income elasticity, price elasticity, elasticity of substitution) shows that: (i) Transaction balances (TB) and Deposits redeemable at notice (DRN) are income elastic (ii) The DRN has displayed a large variation in price elasticity (iii) the monetary assets are not perfect substitutes in EMU-11. The simple sum monetary aggregation assumes all the monetary assets as perfect substitutes, hence a simple sum monetary aggregate distorts the measurement of the monetary aggregate.

## **2.3 Optimal Forest Management for Interdependent Products: A Nested Dynamic Bioeconomic Model and Application to Bamboo**

**Presented by:** Tong Wu (*Cornell University*)

**Co-authors:**

C.-Y. Cynthia Lin Lawell (*Cornell University*)

David R. Just (*Cornell University*)

Jiancheng Zhao (*Zhejiang Academy of Forestry*)

Zhangjun Fei (*Boyce Thompson Institute and Cornell University*)

Qiang Wei (*Nanjing Forestry University*)

Sustainable forest management is an important issue worldwide. Forests supply the world’s population with timber and non-timber forest products, including renewable products such as fruits, nuts, and maple syrup that can be harvested at more frequent intervals than the trees themselves. We develop a nested dynamic bioeconomic model and dynamic structural econometric model of the management of forests that generate interdependent products that differ in their growth cycles, rates of growth, lengths of growing periods, and potential harvest frequency. We apply our model to detailed daily panel data we have collected and constructed on bamboo shoot and bamboo stem harvesting decisions made by bamboo farmers, in order to assess the optimality of their bamboo forest management strategies and to understand the beliefs and perceptions of bamboo farmers that underlie and rationalize their management strategies. We plan to use our dynamic model to simulate, analyze, and design policies and institutions to improve sustainable forest management. Our novel dynamic bioeconomic model has important implications for the sustainable management of forests worldwide, particularly when the forests produce products that grow on trees, are renewable, and can be harvested at more frequent intervals than the trees themselves.

## Track 3: Accounting and Auditing

**Room:** WC G103C (9:30am -10:50am)

**Moderator:** Justin Mindzak (*State University of New York at Fredonia*)

### 3.1 Generational Resistance to Emerging Data Analytic Tools Among Accounting and Finance Professionals

**Presented by:** Cheryl Moore (*Mercyhurst University*)

Just half a decade ago researchers were positing that information on data analytics, AI, ChatGPT and other technological advancements were under-researched in the Accounting and Finance fields. Fast forward 5 years and a literature review on accounting and emerging technologies reveals a plethora of studies focused on acceptance, use, timing, resistance, and education to name a few.

This study seeks to identify and explain why some accountants are resistant to change and delay or forego acceptance of new data analytical methods that can enhance the user's data and increase the efficiency of the worker's duties. Utilizing the Status Quo Bias Theory independently and using this theory in conjunction with the Big Five personality dimensions, several studies investigate the reaction of Excel users and the participant's unwillingness to relinquish the comfort of this analytical tool and the resistance to adopt a new one. This study will continue to expand on this research by looking at generational differences of acceptance and adoption in the accounting and finance fields.

### 3.2 Leveraging Deep Learning for Accounting Fraud Detection

**Presented by:** Victoria Gonzalez (*The State University of New York at Buffalo*)

**Co-authors:**

Sai Teja Reddy (*The State University of New York at Buffalo*)

Chitral Patil (*The State University of New York at Buffalo*)

Haimonti Dutta (*The State University of New York at Buffalo*)

Fraudulent financial reporting encompasses deliberate misstatements or omissions in financial statements, aiming to mislead stakeholders and regulators, resulting in a breach of Generally Accepted Accounting Principles (GAAP). This research introduces a novel predictive model for detecting accounting fraud, leveraging publicly available financial data extracted from 10-K filings. Specifically, a Multi-Layer Perceptron (MLP) is constructed with Random Under-Sampling (RUS) (called RUS MLP) which has comparable performance to traditional machine learning algorithms designed for fraud detection such as logit and probit models. Our findings reveal that advanced deep learning techniques can be used to fortify financial systems against fraudulent activities.

### 3.3 Is Artificial Intelligence (AI) a welcoming Tool to Conduct Risk Assessment and Analytical Procedures?

**Presented by:** Linval Frazer (*The State University of New York at Old Westbury*)

**Co-author:** Jeffrey D'Amico (*The State University of New York at Old Westbury*)

The integration of Information Technology, and the manipulation and use of big data in companies' operations pose a challenge to auditors, and their ability to reduce audit risk to an acceptable level. The use of Artificial Intelligence as a tool to conduct risk assessment and analytical procedures is evaluated in this paper. It presents information on how AI can be used to improve the auditing

process. The paper concludes that the use of AI will enhance auditing procedures and address some of the limitations the profession has faced for many years. It is not expected that AI or any technology will obliterate audit risk completely. However, if used effectively as a tool to support the audit objective, AI can help reduce audit risk.

## **Track 4: Analytics in Business Education**

**Room:** WC S204A (9:30am -10:50am)

**Moderator:** **Itauma Itauma** (*Northwood University*)

### **4.1 Enhancing Business Analytics Education: Strategies for Success**

**Presented by:** **Joseph Porter** (*Nazareth University*)

In this session, I will share proven strategies for teaching Business Analytics, and I will:

1. Clarify the Distinction: I will clarify the disparity between generic analytics (i.e. identifying patterns in COVID data) and Business Analytics (i.e. identifying trends in sales, inventory, customer acquisition, etc.).
2. Address Data Quality: I will emphasize the significance of data integrity by differentiating between clean and dirty data (i.e. inconsistent or missing COVID data).
3. Analytics Framework: I will outline the evolution from Descriptive Analytics (i.e. past sale of a specific product) to Predictive Analytics (i.e. A/B Testing and Regression forecast), and finally to Prescriptive Analytics (i.e. actionable insights on revenue maximization and cost reduction under various constraints).
4. Visualization: Exploring an array of visualization tools such as line graphs, bar charts, and pie charts, I will demonstrate their efficacy in aiding decision-makers to identify trends and patterns.
5. Collaboration and Certification: I will highlight the importance of collaborative assignments and the attainment of certifications from prominent platforms like Google, Cloud, and Salesforce.

### **4.2 Empowered Decision-Making: Bridging the Gap Between Business Simulations and Generative AI**

**Presented by:** **Joseph Kuvshinikov** (*Gannon University*)

Business simulations have transformed the world of business education. Initial explorations in bridging the gap between business simulations and large language model generative artificial intelligence have resulted in empowered decision making. Business simulations have long been embraced as a powerful tool in helping participants hone their strategic business decision-making skills (Kurtz, 2003; Schwarz, 2009). Sources of pedagogical power include: experiential learning (Humphreys, Bakir, & Babb, 2022), the opportunity to try new strategies in a low-risk environment (Mubaraz & Mezrar, n.d.), the opportunity to practice business management and decision-making in a collaborative team-based environment (Anderson & Lawton, 2009), and business simulations allow participants to develop strategic and operational decision-making skills (Levant, Coulmont, & Sandu, 2016). Combining business simulations and generative AI has led to significant new pedagogical synergies. Faculty/facilitators can use live generative artificial intelligence prompts to populate discussions with a myriad of considerations, strategies, and pros and cons of various business decisions (Moser, 1986; Ferreira, González-González, & Adamatti, 2021; Paschen, Wilson, & Ferreira, 2022). The speed at which content is delivered makes generative artificial intelligence ideal for either synchronous or asynchronous learning environments. The purpose of this paper is to report on explorations in the ways faculty can coach simulation participants in prompting AI and discerning



how to apply the results to specific decision-making contexts. Generative AI rapidly equips faculty to embrace each teachable moment with simulation and real-world applications. This explorative initiative report contains several examples of prompts applied in the context of the Income|Outcome (ASI) business simulation.

### **4.3 So Many Decisions: How Higher Education is Utilizing Analytics**

**Presented by: Andrea Rodgers** (*University of Miami*)

Analytics has come to forefront in the business environment over the last decade or so. It is used across all industries and segments. One of the primary ways it is used is for decision-making. The creation of dashboards and other visual tools has made it convenient for CEO's, directors, and others to track key indicators in one place. One industry that the use of analytics is the most widespread and used for a multitude of reasons is in higher education. In higher education, institutions use analytics in the classroom, educating students about what it is, how to use it as well as other aspects including data collection, statistical analysis and reporting and data management. They not only teach it, but also use it in practice outside of the classroom, in the business of education, for decision-making. This paper aims to discuss the ways and how data is used within institutions for decision-making. Being used across the entire institution, not only at the institutional level, but also by the individual colleges and schools. A comparison of types of institutions will also be discussed. Particularly, comparing and contrasting a large, public institution with a small, private institution.

### **4.4 The Use of Generative AI in Quantitative Coursework**

**Presented by: Lisa Walters** (*State University of New York at Fredonia*)

**Co-authors:**

Mark Nickerson (*State University of New York at Fredonia*)

Linda Hall (*State University of New York at Fredonia*)

So-Jin Yu (*State University of New York at Fredonia*)

Generative Artificial Intelligence (GAI) has firmly established itself as a transformative force, poised to revolutionize various industries. As its influence continues to expand, educators are presented with an unprecedented opportunity to harness AI's potential in crafting comprehensive syllabi that incorporate students' engagement with AI. How can educators effectively utilize AI to develop syllabi that not only integrate AI but also encourage its constructive utilization among students? What essential principles should guide this process to ensure both motivation and active participation? This session aims to showcase the creation of a syllabus tailored for an accounting course, illustrating how AI can be employed to generate initial drafts and subsequently refine them to yield robust educational materials. Additionally, the session will delve into the generation of detailed lesson plans for three distinct topics drawn from the syllabus. Following the syllabus model, the prompts for these lesson plans will be fine-tuned to enhance specificity and structure, resulting in more coherent and actionable plans.

Participation from attendees will be solicited to foster engagement and stimulate interest throughout the session. Moreover, the session will culminate in the dissemination of practical tips and best practices applicable to pedagogical endeavors, alongside a discussion of the inherent limitations of GAI in educational contexts.

## Concurrent Sessions (Friday – 2:00pm) Tracks 5-8

### Track 5: Insights into Financial Markets

**Room:** WC G103A (2:00 p.m. -3:20 p.m.)

**Moderator:** Linval Frazer (*The State University of New York at Old Westbury*)

#### 5.1 Predicting Bankruptcy: Ask the Employees

**Presented by:** Kristina Lalova (*Michigan State University*)

**Co-author:** John Knopf (*University of Connecticut*)

The purpose of the paper is to show that employees have information on an upcoming bankruptcy years before actual bankruptcy filings. We test our model using employee information against other bankruptcy models from the literature using a dataset from 2008 to 2020. We build a new model to reflect employees' attitudes before bankruptcy filings and include key variables from the already established bankruptcy models in the literature in our model. We find that our model more accurately predicts bankruptcy two to three years before the actual bankruptcy filing, while the other models are more accurate in the year prior to the bankruptcy. For two and three years prior to a bankruptcy filing, the model outperforms the existing models in in- and out-of-sample tests. We create neural network models consisting of reviews and ratings separately and show that textual reviews provide additional predictive power for bankruptcy filings on top of rating and financial information.

#### 5.2 Interpretable Effect Analysis of Exogenous Market Indicators in Stock Market Prediction

**Presented by:** Max Yun (*Sacred Heart University*)

Geared with Machine Learning (ML) and Deep Learning (DL) techniques, recent stock market prediction studies achieve phenomenal prediction accuracies despite the inherent complexity and difficulty of time series stock price data. However, obtaining a reliable human-friendly interpretability of the prediction outcome is still challenging due to the black-box nature of ML and DL models. Human-friendly interpretability in stock price prediction models helps investors discover the underlying reasons of the prediction outcome and enables a prompt response to unpredictable market prices. Among the types of stock market studies, technical analysis can instantly reflect constantly changing stock prices and avoid drawbacks of fundamental analysis. However, technical analysis using internal price-derived technical indicators is criticized as pseudoscience because of its subjectivity and self-fulfilling prophecy. Besides, input feature space expansion by price-based technical indicators can cause data snooping and sample bias problems. A remedial solution is to use exogenous technical market indicators. Volatility Index (VIX), as the most popular exogenous technical market indicator, expands the information beyond classic price and volume data to a variety of financial information. There is much research on the effectiveness of VIX in stock market prediction, but previous studies fail to observe important characteristics of time series price data. This study focuses on temporality and collective behaviour characteristics of time series data to investigate the effect of VIX in stock market prediction. The proposed piecewise best feature subset selection using Savitzky–Golay smoothing enhances the human-friendly interpretability that reflects temporality and collective behaviour of VIX.

### 5.3 Manufactured Doubt and Stock Market Implications

**Presented by:** Sabrina Davis (*Pace University*)

**Co-author:** Leigh Anne Novak Donovan (*Pace University*)

Organizations deal with uncertainty (Thompson 1967). The way the tobacco industry executives handled extreme pressure and uncertainty has been partially reviewed in the public health domain. Fama et al (1969) introduced evidence of how stock returns respond to information. However, no one has examined how stock markets react to disinformation. This research is designed to add to the existing body of knowledge on manufacturing doubt. Manufactured doubt is a term that has appeared within the healthcare literature and is usually examined in hindsight in areas such as smoking, fossil fuel, and climate change. The research we propose examines the effects of manufactured doubt on cigarette sales and the stock market by examining reactions to positive and negative public announcements divided into 3 categories (1) scientific announcements, (2) regulatory changes and (3) data litigation. This sample contains 40 national announcements from June 6th, 1954 to April 29th, 2021 and 28 cigarette manufacturers. We compared each company's stock price 5 days prior to and 5 days after the announcement. The data includes the daily stock price for 121 days prior to the event study dates for each manufacture, for each announcement date. We calculated the raw percentage price changes, prior to the 11-day window to see if there was any abnormal movement brought on by the announcement. We used the standard event study methodology (Brown and Warner, 1985) with the Abnormal Stock Returns formula  $AR_{it} = R_{it} - E(R_{it})$ . The results show that the negative announcements lowered the stock price and positive announcements increased the stock price was proven. The results were both statistically significant and economically significant and show implications for manufactured doubt strategies used by companies.

### 5.4 The Evolution of the Financial Technology Network

**Presented by:** Alisher Mansurov (*Nipissing University*)

**Co-author:** Marc Pilon (*HEC Montréal*)

The diffusion of financial technologies (FinTech) in financial services has drawn worldwide engagement. However, there is little known on the involvement of various types of organizations in the advancement of FinTech. In this study, we apply a network analysis on 23,000 FinTech news articles from 2008-2022 to illustrate the network of FinTech organizations and examine its characteristics. We also apply a textual analysis on the content of the news articles to identify trends in FinTech and distinguish between the collaboration elements of various organizations. We find that incumbent financial services providers are central in the FinTech network, while the prominence of technology giants, regulatory bodies, and FinTech start-ups has grown. Moreover, ties between similar organizations are stronger, although these connections have weakened over time. Our textual analysis results provide evidence for a shifting focus in FinTech over time and significant differences in associations between various groups of organizations.



## Track 6: Student Research Projects

**Room:** WC G103B (2:00 p.m. -3:20 p.m.)

**Moderator:** Megan Johnson (*State University of New York at Fredonia*)

### 6.1 Franciscan and Money

**Presented by:** Fr. Jason Wooleyhan (*Saint Francis University*)

As our community of Franciscans age and decrease in number, we also have young men entering annually who are able to work and support the community. What does this mean for our sources of income as we change over time?

### 6.2 An Overview of Sport Analytics Methods

**Presented by:** Jacob Minniefield II (*State University of New York at Fredonia*)

**Co-author:** Reneta Barneva (*State University of New York at Fredonia*)

The competitive and performance landscape of sport is changing due to the power of data analytics. Research shows how data analytics in sports can help coaches and players improve performance along with other metrics that are part of their respective sport.

Coaches, players, and other researchers can customize training plans using data analytics, which enhances athlete performance and reduces injury risks. Training regimens are tailored to each participant's requirements by analyzing data, metrics, and other significant markers while in play. This promotes how athletes are in a physical state while performing and how they can improve by using this data found in research.

Data analytics in sports has its roots in basic statistics and observational analysis. But as technologies have emerged and the number of sources to research data has increased—including wearable sensors, video tracking systems, and other performance monitoring wearables.

The potential for data analytics in sports seems limitless as we move forward. The predictive power of analytics is about to reach previously unheard-of heights with the introduction of AI and other computer sourced research methods. With AI being such a used source across the world today, AI advancements within sport will become more common in the upcoming years.

With my research conducting multiple ways that shows how great data analytics and other methods of data research can benefit coaches, athletes and other parts of sport, the combination of sports and data analytics is a mutually beneficial for both as it enhances competition and spectator engagement while raising the bar for athletics through data insights. The competitive advantage in this digitally advanced era goes to those who can use data to find success in sports and use the data to their advantage.

### 6.3 E-Commerce Supply Chain Risk Mitigation and Online Sales Performance

**Presented by:** Aayush Sharma Giri (Brock University)

**Co-authors:**

Shuai Yuan (Brock University)

Anteneh Ayanso (Brock University)

This paper explores the relationship between a retailer's commitment to risk mitigation through the adoption of web features and functionalities and its impact on online sales performance. While

previous research has examined the impact of various retail service offerings on online sales performance, this study adopts a focused approach by investigating the impact of transactional, logistics, and post-sales service offerings. The resulting model proposes three major hypotheses, which are empirically tested using hierarchical multiple linear regression and further assessed for robustness using the binary logistic regression technique. A sample of 398 top retail companies operating in North America is used for the study. The findings reveal a positive relationship between a retailer's commitment to risk mitigation and its online sales performance. Specifically, the results indicate that retailers who proactively adopt risk mitigation strategies are more likely to be categorized as leaders rather than followers in the market. This study contributes to the existing literature on retail and risk mitigation by highlighting the importance of proactive risk mitigation through the adoption of web features and functionalities in the context of online retail services. It also provides guidance for practitioners and managers in assessing their market position and directing their risk mitigation strategies accordingly.

## **6.4 The impact of post-pandemic travel on Environmental, Social, and Governance frameworks**

**Presented by:** Ankita Sinha (*University of Buffalo*)

**Co-author:** Namratha Pulluru (*University of Buffalo*)

The COVID-19 pandemic significantly disrupted the global travel and tourism industries, warranting a detailed analysis of its impacts on Environmental, Social, and Governance (ESG) criteria. This study analyzes how key factors affected by changes in travel patterns influence ESG performance.

The study shows the complex interactions between the pandemic effects and the travel industry's ESG outcomes by employing structural equation modeling to evaluate the impact of the volume of commercial flights, travel costs, infrastructure expansion, employment and unemployment rates, and environmental impacts, among other related variables on ESGs.

Initial findings indicate that a pronounced increase in commercial flight activity and a rise in commercial growth impact employment. These changes profoundly affect the 'Environmental' and 'Social' components of ESG, reflecting changes in carbon footprints and overall community well-being. Additionally, the study assesses the 'Governance' aspect, considering how industry responses and recovery strategies align with sustainable and responsible business practices.

This paper enriches the discourse on the pandemic's repercussions on travel and tourism through the lens of ESG criteria, offering critical insights for stakeholders aiming to navigate the recovery phase while prioritizing sustainability and resilience. The analysis highlights the immediate ESG challenges and frames a discussion around long-term strategies for enhancing sustainability and governance after COVID-19, contributing to a more robust and ethical industry framework.

## Track 7: Advanced Business Analytics

**Room:** WC G103C (2:00 p.m. -3:20 p.m.)

**Moderator:** **Joseph Porter** (*Nazareth University*)

### 7.1 3D Methods for Geospatial Business Analytics

**Presented by:** **Gabby Resch** (*Ontario Tech University*)

The ability to analyze and visualize geospatial data is a crucial skill for making sense of geopolitical phenomena (e.g. climate migration), global economic issues (e.g. supply chain disruptions), and public health crises (e.g. pandemics). Various contemporary geographic information systems provide innovative methods for analyzing, visualizing, and mapping data, from integrated geographically weighted regression tools to map-centered interactive dashboards to scrollytelling story maps. The recent adoption of 2.5D methods (e.g. "spike maps") in domains like data journalism, coupled with mixed reality/metaverse hype, has led to a flurry of interest in 3D tools for geospatial analytics. Industry leading platforms like Esri's ArcGIS now enable integration with game development software like Unity and Unreal Engine, making it possible to prepare immersive 3D dashboards and virtual reality interfaces for real-life business analytics applications. That said, little consensus has formed around appropriate use of 3D tools, ranking of visualization methods, development best practices, etc. It also remains to be seen what these trends will mean for business analytics/intelligence research and practice, where big data and AI-driven approaches have led to novel processing, aggregation, mining, and forecasting techniques, but far less attention has been given to interactive visualization methods. This paper will share insights from multiple iterations of a course on 3D methods for GIS that I developed and have taught in a Business and IT program. It will discuss which methods are intuitive, which ones confuse students, and which ones hold promise for business analytics.

### 7.2 Spatial Big Data and Shopping Mall Analytics: an exploration beyond the hype

**Presented by:** **Tony Hernandez** (*Toronto Metropolitan University*)

**Co-author:** **Joe Aversa** (*Toronto Metropolitan University*)

Mobile location data (MLD) in shopping mall analytics grew substantially during the pandemic. During this time of widespread business and consumer uncertainty, several major data vendors packaged MLD, a form of spatial big data, and marketed their data solutions to commercial landlords and their tenants with the promise of providing unparalleled insights into rapidly changing shopping behaviours. The ability to geofence commercial properties and extract data on visitors to reveal shopping patterns over time at a level of resolution not previously thought plausible created a rapid adoption of MLD-based analytics. This paper critiques MLD-based shopping mall analytics for a small set of major malls in the US for the pre-, during and post-pandemic period. Through a detailed examination of pathing level data, the analysis highlights the significant challenges associated with MLD and discusses the balance between the promise and the hype. The paper demonstrates the varied metrics and insights that can be developed using MLD data. However, significant issues related to data accuracy and coverage, bias and representativeness, inference and subjectivity, and the growing concerns over consumer privacy and the surveillance state are also explored. The paper identifies several key questions that remain to be addressed and form the basis of a future research agenda.



### **7.3 Exploring the Potential of Analytics to Better Inform Individuals Decisions: A Conceptual Approach**

**Presented by: Satya Chattopadhyay** (*University of Scranton*)

**Co-authors:**

Richard O'Hara (*University of Scranton*)

Ramsha Siddiqui (*University of Scranton*)

The widespread embrace of analytics across disciplines, driven by the surge in available data, has become a cornerstone in decision-making. Operational analytics, marketing analytics, financial analytics, and business analytics are now integral components of academic programs in business. However, the predominant focus has been on managerial decision-making, benefits primarily measured in economic terms. This leaves a gap in practice and research of enhancing consumer decision-making using personal analytics. This study addresses this gap by exploring the use of Artificial Intelligence (AI) to empower individuals in making better decisions that consider economic as well as other criteria. This can be done by leveraging analytics to access previous personal experience data and relevant external data feeds over time.

Examining three trends—data proliferation, increased computing power, and advancements in AI and machine learning—this research explores their collective potential to aid individuals in making better, more informed decisions amid the growing complexity of daily choices. The study delves into the use of AI to analyze previous experiences, including individual preferences, learned preferences, and stream of received social media feeds, to develop a dynamic decision-making application targeted at individuals.

By addressing gaps in existing literature and available AI-driven tools, this research contributes valuable insights into the practical implementation of AI tools for individual decision-making. It proposes a framework that considers the multifaceted nature of human choices, emphasizing the adaptability of available tools to evolving needs and preferences across diverse contexts of decisions made on a day-to-day basis.

### **7.4 A Total Data-to-Model-to-Decision (TDMD) framework for Business Analytics**

**Presented by: Anthony Lee** (*Eastern University*)

In our digitized and interconnected world, data has emerged as a critical currency in business. Achieving success in today's world necessitates transforming into a quant-savvy entity or professional, requiring a broad spectrum of quantitative skills across big data, science, statistics, analytics, business knowledge, and technology. The shift toward enhanced Speed-to-Understanding, propelled by AI and machine learning, is reshaping decision-making capabilities for quant-focused companies.

As the Business Analytics curriculum lead, I surveyed diverse sources of quantitative literature, textbooks, both degree and non-degree educational programs, and various social media outlets, finding a wealth of information. However, the insights often present fragmented and conflicting views such as the ongoing debate on terminologies regarding whether "Data Science" is a subset of "Data Analytics," or vice versa. This calls for a more comprehensive framework to navigate this complex quantitative landscape.

At this conference, I aim to present my distilled findings into a two-dimensional schematic: the Total Data-to-Model-to-Decision (TDMD) framework. Leveraging Systems Engineering and over 30 years of industry analytics-centric experience, this framework integrates a four-step decisioning process (Access, Analyze, Assess, Act) across three core disciplines (Data, Math-Modeling, Business) and data roles (Creators, Curators, Consumers). This TDMD model not only "follows the data" but also enables

both small and large enterprises to calibrate their quantitative teams and equip them with a fitting skill set.

## **Track 8: Industry Insights**

**Room:** WC S204A (2:00 p.m. -3:20 p.m.)

**Moderator: Mohammad Nasim** (*Northwood University*)

### **8.1 Global Supply Chain Analysis of Electric Vehicles**

**Presented by: Robert Cutlip** (*Fairmont State University*)

**Co-authors:**

Rebecca Giorcelli (*Fairmont State University*)

Hunter Baker (*Fairmont State University*)

Michael Gaskill (*Fairmont State University*)

Joshua Hite (*Fairmont State University*)

Austin Kay (*Fairmont State University*)

The global demand for electric vehicles (EVs) is rapidly increasing, and the supply chain plays a crucial role in meeting the increased demand. The EV battery supply chain includes the extraction of raw materials, the transportation of those raw materials to facilities, battery production, and eventual disposal or recycling of used batteries being phased out of the market. The process is further complicated by other variables such as the battery components being sourced from a variety of different countries, and final products are assembled in different countries from where the raw materials are extracted.

The extraction of raw materials for EV batteries, such as cobalt, is typically done in more developing countries such as the Democratic Republic of the Congo. Other minerals used in EV batteries, such as nickel and lithium, can be sourced from Australia and Chile. These raw materials are then transferred to other countries for processing and refinement.

The EV supply chain involves a wide range of stakeholders, some of which include mining companies, refining, and processing companies, and the vehicle manufacturers themselves. As the demand for EVs increases, there will be a significant amount of pressure being put on the supply chain, which makes it crucial for sustainability and resilience. In this research, the supply chain of battery and magnet mining and processing was analyzed using descriptive, predictive, and prescriptive analytical models. Our results indicate that diversification of the supply chain of rare earth oxides and metals will improve supply chain resilience in the near term.

### **8.2 Strategizing Success: Enhancing Engineering Consultancy with Data-Driven Proposal Analytics**

**Presented by: Dennis Voss** (*Crozier: Consulting Engineers*)

In the competitive realm of engineering consulting, strategic planning and decision-making are crucial for business success. This presentation delves into the transformative impact of leveraging proposal analytics for enhanced performance. By utilizing a comprehensive set of metrics — including proposal numbers, win/capture rates, proposal value, and cross-selling — we conduct a multidimensional analysis to inform targeted strategies for each department.

Our approach involves rigorous monthly, quarterly, and annual analyses that guide not only immediate adjustments but also long-term strategic forecasting. A particular focus is on predicting 12-month revenue based on won proposals. This data-driven methodology enables precise planning and significantly improved business outcomes.

A key innovation is the win prediction tool, which leverages five years of proposal data to forecast success rates. Project managers input potential proposal details, and the tool evaluates these against historical data to predict success probabilities. It highlights strengths and weaknesses, allowing managers to recalibrate strategies to increase win rates. This tool has become instrumental in refining our approach to proposal development and strategic bidding. Furthermore, we've developed a proposal/project online map that provides managers with historical and geographical data, enabling better-informed decision-making. This presentation will showcase the methodology, implementation, and tangible results of integrating sophisticated analytics into our business strategies, underlining the power of data in driving growth and operational excellence in the engineering consulting sector.

### **8.3 Words Matter: Evaluating the Communication of Data in Press Releases**

**Presented by:** Travis Brodbeck (*Siena College*)

**Co-author:** Necip Doganaksoy (*Siena College*)

Founded in 1980, the Siena College Research Institute (SCRI) conducts regional, statewide and national surveys, of experts and the public, on economic, political, cultural, and social issues. These surveys conducted primarily via telephone interviewing provide ample findings for stakeholders to act upon and the media to discuss. Following the conclusion of a poll, SCRI creates a press release based on the analysis of the data that is distributed to journalists and media entities. Like the childhood game of telephone, the meaning of the findings of empirical survey data are translated into a narrative that is then adapted by members of the press for local and national stories. In a consolidated and often politicized media landscape, an important question arises for this non-partisan organization: could SCRI's press release bias how the press covers the poll?

In an evaluation of press releases and the polling data tied to them, this paper looks at the biases that can creep into natural language in the form of a press release. The practical implications of this research provide a framework for research entities to evaluate their communication of findings to the public with respect to what the empirical analysis of data demonstrates. Using sentiment analysis and other text processing tools powered by artificial intelligence, this paper demonstrates how to visualize the sentiment of press releases and compare them to historical trends based on survey data. Additionally, this analysis compares the performance of human coding of sentiment versus the output generated by ChatGPT to provide insights into the reliability of generative AI tools for text processing.

### **8.4 Machine Learning Approaches for Predicting Wine Quality from Chemical Properties in Azure Machine Learning Studio**

**Presented by:** Renu Mutha (*Northwood University*)

**Co-author:** Itauma Itauma (*Northwood University*)

This paper presents a study that uses Azure Machine Learning to predict wine quality based on its chemical properties. The dataset used in this study includes various chemical properties of wine along with quality evaluations, where the target variable is the wine quality rating. We evaluate several classification models, including VotingEnsemble, Random Forest, Decision Tree, and Logistic Regression. The objective of this study is to develop an accurate and efficient model for predicting wine quality based on chemical characteristics. The VotingEnsemble Classification method outperforms other methods with an accuracy of 87.5%. The findings of this study can be used by winemakers to improve their production process and enhance the quality of wine.



## Concurrent Sessions (Saturday – 9:30am) Tracks 9-12

### Track 9: Applied Economics 2

**Room:** WC G103A (9:30am -10:50am)

**Moderator:** Joseph Kuvshnikov (*Gannon University*)

#### 9.1 Organic Farming Transitions: A Dynamic Bioeconomic Model

**Presented by:** Michael A. Meneses (*Cornell University*)

**Co-authors:**

Clare L. Casteel (*Cornell University*)

Miguel I. Gómez (*Cornell University*)

David R. Just (*Cornell University*)

Ravi Kanbur (*Cornell University*)

David R. Lee (*Cornell University*)

C.-Y. Cynthia Lin Lawell (*Cornell University*)

We develop a dynamic bioeconomic model of a farmer's decisions regarding the use of synthetic compounds (e.g., synthetic fertilizers and pesticides) and the transition from conventional to organic management. Our crop production model accounts for newly documented interrelationships among synthetic compound use, soil health, and crop yields. In particular, new insights from soil science show that the use of synthetic compounds can be harmful to beneficial soil microbes that improve agricultural yields by enhancing crop nutrient use, stress tolerance, and pest resistance. We characterize and solve for a "fully informed" farmer's optimal synthetic compound use strategy, and for whether and how a farmer should transition from conventional to organic farming. These solutions are compared to those from a "misinformed" model in which the farmer is not aware of the interactions between synthetic compound use, soil health, and crop yields, allowing us to assess how gaining knowledge of these interactions might be expected to change farmers' synthetic compound use strategies and, ultimately, their decisions around adopting organic management. We identify and discuss agricultural and economic conditions under which farmers can be expected to voluntarily reduce their reliance on synthetic compounds, and possibly even adopt organic management, upon learning of the benefits associated with stewardship of their soil's microbiome. We apply our model to farmer-level pesticide-use panel data to estimate parameters governing farmers' current understanding of the interrelations between soil microbes, pesticides, and crop yields, and to examine possible effects of extension programs targeting farmers' understanding of soil microbes.

#### 9.2 Does your fandom really matter? The Effects of Heterogeneous COVID-19 NFL Stadium Attendance Restrictions

**Presented by:** Adam Cook (*State University of New York at Fredonia*)

Using a unique panel data collected and aggregated from Pro Football Reference (<https://www.pro-football-reference.com>), Sports Media Watch (<https://www.sportsmediawatch.com>), the 506Sports archives 2009-2022 (<https://archive.506sports.com/wiki/NFL>), NFL Weather (<https://www.nflweather.com>), NFL Penalties (<https://www.nflpenalties.com>) and Australia Sports Betting (<https://www.aussportsbetting.com>) websites, I test the impact of NFL fan attendance using heterogeneously-applied COVID-19 stadium attendance restrictions during the 2020 NFL season as

an instrumental variable for fan attendance. I analyze how varying stadium attendance during this period affected various outcome variables including total, home and away team penalties, final score point differentials, TV viewership, Nielsen ratings, and total home and away team scores. Additionally, I estimate the effect of stadium attendance on point spread and over/under outcomes in NFL sports betting markets. I find that fan attendance significantly affected both home and away team penalties, away team scoring (while having no effect on home team scores), TV viewership and Nielsen ratings. The IV estimates indicate that for every additional 20000 fans in the stadium, away team score decreases by approximately 1 point. This result indicates the contribution of the fanbase to home team success.

### **9.3 Flexible Spending Account Allocations: Exploring Factors that Contribute to Allocation Decisions**

**Presented by: Melissa Waite** (*State University of New York at Brockport*)

**Co-author: Mustafa Canbolat** (*State University of New York at Brockport*)

This study explores optimal Flexible Spending Account (FSA) allocations. An employer- provided benefit permitting employees to contribute pre-tax dollars to cover eligible medical expenses not paid by insurance, health care FSA funds are “use it or lose it,” requiring participating employees to estimate anticipated health expenses. Eligible expenses include co- pays, dental and vision care, medical devices, and over-the-counter items such as allergy medicine, pain relievers, sunscreen, DNA testing, acne creams, feminine hygiene, birth control, and first aid supplies, among others. With the passage of the 2020 CARES Act expanding the range of eligible items to include more over-the-counter medications and consumer goods, expending annual FSA funds is made easier, as consumers can deplete their FSA accounts at the end of the year with the purchase of eligible OTC items. This study expands the field of estimating optimal contributions to FSAs by exploring two research questions: (1) Will subjects who are aware of reimbursable items and tax savings be more likely to contribute the optimal amount to an FSA? (2) Will subjects who experience a large, unexpected health expenditure change their ordering behavior (FSA contribution amount) in the future? These questions are tested using simulation experiments with a 2x2 factorial design to explore decision-maker behavior.

### **9.4 The heterogeneous effects of COVID-19 on young consumer purchasing patterns: An examination using causal random forest**

**Presented by: Youngran Choi** (*Embry-Riddle Aeronautical University*)

The coronavirus (COVID-19) pandemic prompted governments worldwide to implement lockdown measures that resulted in an increase in online purchases. Young consumers, who are familiar with browsing online platforms, may respond differently than older consumers to the pandemic in terms of online purchases. The generalized random forest (GRF) was employed to identify the heterogeneous causal effects of COVID-19 on the online shopping habits of young consumers. The attributes the GRF analysis identified as sensitive to COVID-19 in inducing online purchases include: gender based on employment, race, television ownership, and specific types of grocery products (i.e., dry foods and frozen foods). Understanding the heterogeneity in the effects of COVID-19 that induce young consumers to shop online can provide practitioners with insights on how to prioritize and target high-impact groups with specific characteristics while improving management and policy strategies for future pandemics or other extended periods of disruption of in-store businesses.

## Track 10: Operational Strategies

**Room:** WC G103B (9:30am -10:50am)

**Moderator:** Anthony Lee (*Eastern University*)

### 10.1 Analyzing the Predictive Patterns in Time Series of Building Electricity Consumption

**Presented by:** Hsien-Tseng Wang (*Lehman College, City University of New York*)

**Co-author:** Di Wu (*Lehman College, City University of New York*)

The predictability of time series is an important component that reflects the inherent information contained in it and can be used to assist in evaluating the performance of forecasting models. Typically, the performance measure of a forecasting model outputs the probability of success but unfortunately does not provide an informative understanding for improvability in prediction accuracy. Recognizing this challenge, our research focuses on the intrinsic predictability, which is an intuitive metric that quantifies predictability levels in a time series. The intrinsic predictability of time series can be very informative in deciding whether the time series is predictable, or a chosen model fails to achieve accurate forecasting results. In our analysis, we utilize building electricity consumption datasets obtained from a higher education institute for evaluating the intrinsic predictability. Our goal is to investigate the feasibility of a unified metric that includes information entropy to result in the quantification of intrinsic predictability of time series data. By connecting our findings with wider fields of business analytics, we expect that the results of our study will not just help improve forecasting methodologies but also provide valuable insights for optimizing energy consumption strategies in broader business sectors.

### 10.2 Business Improvement Districts and the Homeless: Can Businesses Actually Help?

**Presented by:** Shahryar Gheibi (*Siena College*)

**Co-author:** Wonhyung Lee (*State University of New York at Albany*)

Contrary to the conventional perception that business improvement districts (BIDs) deploy a strong-arm approach toward chronically homeless populations, there is empirical evidence that several BIDs take a more holistic, long-term approaches that, not only are based on the framework of public space management and security, but also of service delivery and policy advocacy. While previous research revealed such a wide range of strategies that BIDs implement, there is limited understanding of what type of factors affect BIDs' attitude toward homelessness.

To examine the factors associated with BIDs' various approaches to homelessness, this study utilizes machine learning to analyze survey data conducted with BIDs regarding their experiences of homelessness and approaches to homeless populations at a district level. Our results suggest that while collaboration with law enforcement (a strong-arm strategy) is a reactive approach to solving issues generated by the homeless, the mere presence of homelessness serves as a significant driver for BIDs to consider homelessness a social phenomenon and adopt more holistic strategies such as establishing outreach programs.



### 10.3 Global Supply Chain Analysis of Pharmaceuticals

**Presented by: Robert Cutlip** (*Fairmont State University*)

**Co-authors:**

Jacob Morris (*Fairmont State University*)

Eugene Barbery (*Fairmont State University*)

Isaac, Stankus (*Fairmont State University*)

Rebecca Giorcelli (*Fairmont State University*)

The pharmaceutical industry will always be an evolving field, with new drugs and treatments always being researched and developed. In the context of the U.S. pharmaceutical supply chain, Analytics, Data Science, and Artificial Intelligence (AI) can be used to highlight the true extent of China's dominance in the U.S. pharmaceutical supply chain, despite the media obfuscating the reports. Utilizing AI, data science, and BI, pharmaceutical companies will have a better understanding of United States supply chain to mitigate the risk of over-reliance on China for pharmaceutical imports. Descriptive analytical analysis indicated that the United States has experienced a 98.7% increase in imports from China since 2017. In 2021, the U.S. received 11,848,640 Kgs in antibiotics, and precursors from countries that have signed the Chinese Belt and Road Initiative (BRI). Total imports of antibiotics and precursors from these countries accounted for approximately 49% of the total U.S. imports. Predictive analytics of global supply indicated a heightened reliance on China and its BRI partners, particularly in antibiotics and its precursors.

Prescriptive analytics was also conducted based on data and trends from the descriptive and predictive analytical models. One recommendation is to establish Standards for Pharmaceuticals: The U.S. should coordinate their strengths with other leading countries to develop and enforce global standards for pharmaceutical products. This will prevent China from dominating the pharmaceutical industry and ensure the safety and efficacy of pharmaceuticals worldwide. Secondly, diversifying their Pharmaceutical Supply Chains to reduce the reliance on Chinese pharmaceutical supplies by encouraging the development of alternative partners for precursors, raw materials, and finished/manufactured products. Third, the United States should commit to stronger engagement in strategic partnerships with other countries to counter China's influence, particularly with the countries already involved within the BRI.

### 10.4 Global Supply Chain Analysis of Semiconductors

**Presented by: Rebecca Giorcelli** (*Fairmont State University*)

**Co-authors:**

Robert Cutlip (*Fairmont State University*)

Hayden Andersen (*Fairmont State University*)

Nicole Hall (*Fairmont State University*)

Brandon Arnal-Glasscock (*Fairmont State University*)

Global demand for semiconductors is rapidly increasing due to the use of electronic circuits in many consumer and defense-related products. Semiconductors are an integral part of an electronic circuit resident in many everyday devices such as cars, appliances, and phones, with the United States being the largest consumer of semiconductors next to China. Taiwan is the world leader for semiconductor manufacturing with 63% of the market share and their largest manufacturer, TSMC (Taiwan Semiconductor Manufacturing Company), produces 54% of the world's supply. However, advanced semiconductors are the most vital product and are used in laptops, cars, medical equipment, and phones. Taiwan absolutely dominates the market of advanced semiconductor manufacturing, being home to 90% of the manufacturing capacity. Compared to Taiwan and TSMC, other notable producing countries and manufacturers include South Korean company Samsung at 17% market share and Chinese company SMIC at 5%.

As the demand for semiconductors increases, there will be a significant amount of pressure being put on the supply chain, which makes it crucial for sustainability and resilience. In this research, the supply chain of semiconductors was analyzed using descriptive, predictive, and prescriptive analytical models. Analysis indicated that Taiwan is the largest manufacturer of semiconductors, although they are not dominant in all steps of the supply chain. Many other countries are involved in the design, manufacturing, and processing, such as the USA with design or Japan with wafer production. Thus, continued diversification of the semiconductor supply chain will improve supply chain resilience in the near term.

## **Track 11: Insights and Innovations in Analytics**

**Room:** WC G103C (9:30am -10:50am)

**Moderator:** Satya Chattopadhyay (*University of Scranton*)

### **11.1 Option Valuation with Conditional Heteroskedastic Hidden Truncation Models**

**Presented by:** Rachid Belhachemi (*Le Moyne College*)

While asymmetric mixture models improve option pricing over generic pricing models, mispricing remains due to their inability to capture the effect of economic factors on price levels. This paper uses the hidden truncation normal  $\Leftarrow$ HTN $\Rightarrow$  distribution introduced by Arnold et al. (1993) and the NGARCH model of Engle and Ng (*J Finance*, 48:1749–1778, 1993) to price options. Compared to the Black–Scholes model, the HTN-NGARCH option pricing model has extra parameters linked to economic dynamics and with economic interpretations. The model integrates some stylized facts underlying option prices such as a time-varying price of risk, non-normal innovations, asymmetry, and kurtosis. The model can be estimated by maximum likelihood. With an application to market data, we show that the HTN-NGARCH model accurately prices index options and captures adequately the smirk of implied volatility.

### **11.2 Missing Data Imputation – A Two-Phase Model**

**Presented by:** Di Wu (*Lehman College, City University of New York*)

**Co-author:** Hsien-Tseng Wang (*Lehman College, City University of New York*)

In the domain of business analytics, data science, and information science, the challenge of addressing missing data is ever-present and often complicated to both scholars and practitioners. This paper introduces a novel two-phase model designed to navigate this challenge with precision and clarity. In phase 1, a supervised approach is deployed to comprehensively understand the unique characteristics of the specific dataset. This initial phase conducts an exhaustive evaluation of existing missing data imputation methods, including both traditional statistical techniques and advanced machine learning-based approaches. These methods are rigorously assessed to determine their applicability to the dataset's specific attributes. In phase 2, the selected methods from the previous phase are applied to the dataset for the actual missing data imputation. The contribution of this two-phase model lies in its practicality and its ability to resolve the common dilemma faced by practitioners when confronted with a myriad of imputation methods. By adhering to a structured and data-driven approach, this model minimizes the uncertainty and complexity that often surround the method selection process. The outcome is the confident and informed selection of the most effective imputation method fitted to the unique characteristics of the given dataset. In doing so, this approach contributes not only to enhanced clarity but also to increased effectiveness in the domain of missing data imputation, thus strengthening the foundations of sound data science and rigorous research practices.

### **11.3 Measuring Online Customer Satisfaction Based on Customer Reviews: Topic Modeling Method (AI)**

**Presented by: Gehan Dhameeth** (*Wells College*)

Companies spend an extensive amount of money trying to retain their customers. However, organizations have lost customers as a result of poor loyalty. This phenomenon is predominantly noticeable among online customers. The need for a tool to measure online customer satisfaction that goes beyond the capabilities of existing tools has been the root cause of the issue mentioned above. This quantitative study aimed to explore the online customer satisfaction measurement dimensions ground a model that can be applied across industries to measure and predict online customer satisfaction by administering an online survey via social media to 462 respondents using supervised and unsupervised machine learning techniques combined with the topic modeling algorithm (Latent Dirichlet Allocation - LDA). This study discovered a significant relationship between the independent variables (navigation, playfulness, information quality, trust, personalization, and responsiveness) and the dependent variable (online customer satisfaction) using multiple linear modeling (LSM). Furthermore, navigability and playfulness were the most significant factors influencing online customer satisfaction relative to other independent variables. This study also discovered that the phenomenon occurs in both age groups, young and old customers. The limitations include being a cross-sectional study with challenges establishing external validity, having a narrow focus by only considering the retail sector (B2C), and being limited to the United States market.

### **11.4 Replacement or enhancement: Future of academic research in the emergence of AI**

**Presented by: Mary Han** (*Toronto Metropolitan University*)

Validity and reliability are important for research as its result need to be generalizable. For decades, management research has been using limited number of samples ranging from thirty participants for qualitative method to ten thousand using quantitate method. These research draw results from limited samples size and have been published. Some are leading work in their discipline. AI is not newly emerged but its impacting in our life is. Ranging from our daily life to our management research, it is becoming more obvious as scholars are drawing from AI in their respective fields. Will AI overturn decades of research findings if we test them all with AI? Though it's not likely that all research will be rerun, but scholars have compared traditional research methods to AI based methods and found alarming results. Comparative research found the benefits of AI in academic research is not limited in size of sample, that AI based research can "undertake", "read" and "analysis" more data entries; speed of results generation, that it is faster and easier to input data and faster in generating results; but also, accuracy of findings, that results are actually more accurate than traditional methods. These have important implications to the future of academic research. What shall we do? Where do we go from here? Shall academic research proceed to replace logistic regression with XGBoost? Or developing some methods to combine, re-bundle or reconfigure the research models so that AI can enhance our research and results, if so, how? We conclude with theoretical and practical implications and directions for future research.



## Track 12: Management and Education

**Room:** WC S204A (9:30am -10:50am)

**Moderator:** **Andrea Rodgers** (*University of Miami*)

### **12.1 Merging Project Management with Data-Driven Student Performance Evaluation: A Transformative Approach**

**Presented by:** **Eren Akdur** (*Ithaca College*)

In project management, the Schedule Performance Index (SPI) is a crucial metric that assesses the efficiency of work completion and time utilization throughout a project's lifecycle. This metric serves as a valuable tool for project managers, offering a quantitative measure of schedule adherence and aiding in timely decision-making to ensure project success.

In the educational context, leveraging SPI involves adapting this project management principle to gauge student progress and success. By aligning educational objectives with planned learning outcomes, educators can employ SPI as a measure to assess how effectively students are advancing through their courses. This adaptation requires a clear delineation of learning objectives, meticulous planning, and the incorporation of data analytics to track student performance over time. Utilizing SPI in education thus empowers educators to provide timely feedback, predict potential challenges, and optimize interventions, contributing to a more adaptive and proactive learning environment. This presentation explores the innovative fusion of Data Analytics and Project Management for effective decision-making in student success and progress track. The strategic integration of Project Management's Schedule Performance Index (SPI) into data-driven methodologies for measuring student course success serves as the cornerstone of this transformative approach.

### **12.2 Leveraging Large Language Models for Predictive Analytics in Student Performance Classification**

**Presented by:** **Itauma Itauma** (*Northwood University*)

In today's competitive educational landscape, accurately predicting student performance is crucial for enhancing academic outcomes and ensuring student success. Traditional machine learning (ML) techniques have been widely employed for student performance classification, but their effectiveness is often limited by the structured nature of their input data. This paper explores the application of large language models (LLMs), specifically GPT, powered by the OpenAI API, for predictive analytics in student performance classification.

The Higher Education Students Performance Evaluation dataset, encompassing personal questions, family questions, and education habits, is utilized as the foundation for the study. The performance of GPT-based LLMs is compared against traditional ML algorithms, such as logistic regression and decision trees, in predicting students' end-of-term performances. LLMs have been shown to capture and analyze the nuances of unstructured text data, leading to more accurate performance predictions. LLMs can provide valuable insights into the factors influencing student performance, enabling educators to tailor interventions and support strategies to address individual student needs. Additionally, LLMs can be continuously updated with new data, ensuring their adaptability and relevance in the ever-changing educational landscape.

In conclusion, this paper explores the transformative potential of LLMs in predictive analytics for student performance classification. By leveraging the power of LLMs, educational institutions can gain a deeper understanding of student factors, optimize resource allocation, and ultimately enhance student success rates.

### **12.3 Introducing Music Analytics to Undergraduate Students**

**Presented by: Reneta Barneva** (*State University of New York at Fredonia*)

**Co-authors:**

Anthony Casuccio (*State University of New York at Fredonia*)

Stuart Shapiro (*State University of New York at Fredonia*)

In the last decade, the music industry was profoundly transformed by the new technologies and platforms and the accumulation of big data. Several new business models have emerged. Data became an asset and a key aid for song producers, artists, labels, listeners, and professionals across all fields of the music ecosystem. In particular, it is widely used for music recommendation, song analysis, promotional strategies, decision-making, and pricing.

Music analytics skills and expertise are in high demand and the specialists are very well paid. There are several music analytics tools in the market, such as Soundcharts, Chartmetric, and Mordor Intelligence, that provide information to stakeholders. The music analytics applications extend to other fields such as gaming, social media, and films.

The supply of music analytics education and training is limited, both nationally and internationally. There are very few academic programs that offer music analytics as a major or minor, as most of these programs are in specialized and highly priced universities. The majority of them are at master's level. Therefore, there is a need for a more comprehensive and integrative program that covers the various dimensions and disciplines related to music analytics. In this presentation, we will propose an approach towards music analytics education in the settings of a small liberal arts college.

### **12.4 ato: A Phonetic Alphabet to Teach Reading and Spelling!**

**Presented by: Edward McClenathan** (*State University of New York at Fredonia*)

Despite our best efforts, the U.S. ranks very low in Reading literacy. On that educators, political leaders, and the public agree. Something must be done.

Proposal: A teaching phonetic alphabet that works and is also spell-friendly. The alphabet is called ato which stands for Adjusted Traditional Orthography.

History: ITA, a Pitman alphabet was tried for a while in Fredonia schools. (It was an odd alphabet that worked well at first, but didn't feature spelling.) The ato alphabet, which did emphasize spelling, was part of an experiment with West Seneca pupils. A full report can be found in a University of Buffalo dissertation: A Comparison of Three Alphabetic Media Used in Beginning Reading Instruction. (The three alphabets were Traditional Orthography, Initial Teaching Alphabet, and my ato alphabet.) Dr. Richard Sheil (SUNY Fredonia Emeritus) an expert in linguistics, believed in ato so much that he made the alphabet available for printing.

What's needed: A team to develop, publish and promote the ato Reading Instruction Method. (The success of ato would bring national attention to SUNY Fredonia and to the persons involved.)

# **Best Paper Awards**

**To be announced at the conference!**

# Fredonia School of Business

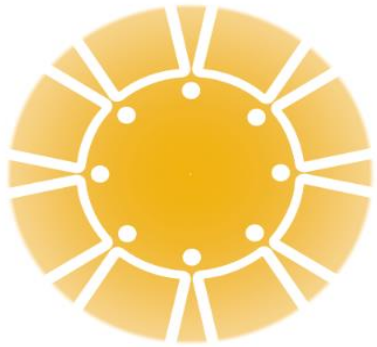
The Fredonia School of Business prepares future business leaders by providing the knowledge, skills, and real-world experience necessary to compete in a global business environment. We offer a wide range of business programs to prepare you for success in Accounting, Public Accountancy, Finance, Management, Marketing, Business Administration, Music Industry, Sport Management, and Economics. All programs in the School of Business will introduce you to the latest technology, make you aware of the global and cultural components of business, and provide you with experiential learning and practical internship opportunities. Our curriculum emphasizes critical thinking, communication skills, business ethics, and professionalism.

The School of Business sustains the tradition of excellence at Fredonia, which is consistently ranked among the finest public universities in the Northeast -- and among the most affordable options in higher education. Small class sizes lead to close interaction with our faculty and the opportunity to conduct research at the undergraduate level - a hallmark of a Fredonia education. In addition, all students have opportunities for internships, available locally, regionally and across the nation.

Our students have access to the Center for Innovation & Economic Development (CIED), which supports start-up companies committed to Western New York. The Center is a New York State certified business incubator operated by SUNY Fredonia. Formerly called the Fredonia Technology Incubator (FTI), the CIED provides entrepreneurs with access to work-ready space, business consulting, mentoring and training, professional services, assistance with business formation, networking opportunities, and connections to University resources and student interns. Students work with entrepreneurs on market research, business plan development, operations and record keeping, and unique problem-solving initiatives. The Center expands the entrepreneurial aspects of our curriculum, enhances internship and employment possibilities, and inspires students to start businesses of their own.







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