Great Lakes Analytics Conference

October 4, 2019

presented by
The College of Letters and Science

University of Wisconsin
Stevens Point

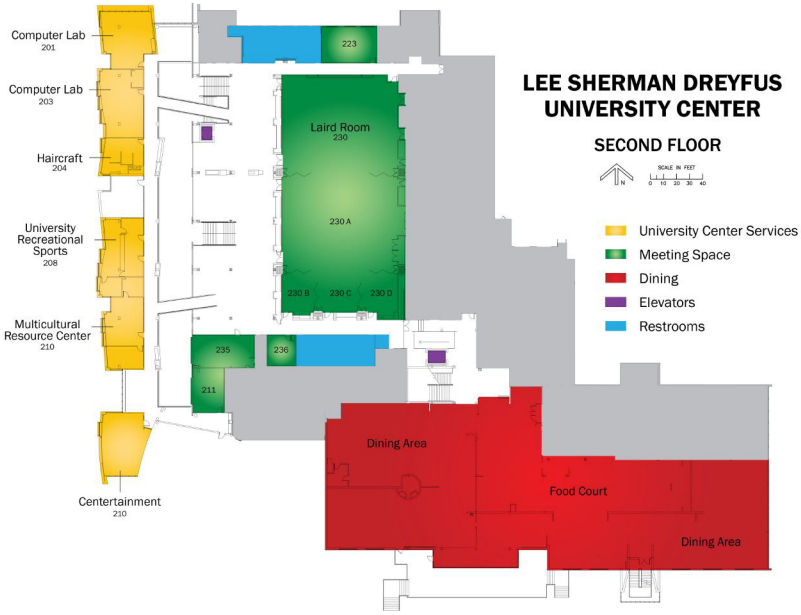
Great Lakes Analytics Conference at a glance

7:30 a.m. Registration
8:30 a.m. Welcome and Overview
8:35 a.m. Keynote Speaker: Jeffrey Polzer
9:20 a.m. Break
9:30 a.m. Breakout Sessions 1
10:05 a.m. Breakout Sessions 2
10:35 a.m. Break
10:45 a.m. Breakout Sessions 3
11:20 a.m. Breakout Sessions 4
Noon Lunch
1 p.m. Keynote Speaker: Joseph Retzer
1:45 p.m. Break
2 p.m. Breakout Sessions 5
2:40 p.m. Breakout Sessions 6
3:10 p.m. Break
3:20 p.m. Breakout Sessions 7
4 p.m. Breakout Sessions 8
4:30 Closing Remarks

Wireless Access
To access the guest wireless network, connect your device to the wireless network connection identified as "UWSP_Unsecure_Guest." Next, open your web browser and register by entering a valid email address.

The eduroam wireless network is a secure network that allows visitors from other colleges and universities to connect to it with the credentials of their home institution, provided that their institution also participates in eduroam. This wireless network is labeled "eduroam."

Dreyfus University Center Maps



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Use hashtag #GLAC when posting about today's event!

University of Wisconsin
Stevens Point

Welcome to the Great Lakes Analytics Conference!

About five years ago, I arrived at the University of Wisconsin-Stevens Point without much knowledge of what went on here during the day. My experiences with the university to that point had largely been limited to attending basketball games on nights and weekends, with the understanding that they were part of a more broadly successful athletic program.

Upon starting, I was tasked with writing feature stories for various College of Letters and Science publications. One of the fantastic benefits of working in the College at the Core is the diverse subject areas our faculty and students tackle, including:

- Genetic traits of sprinters and distance runners
- Advanced math used to create schedules for collegiate athletic conferences
- The fast-growing field of data analytics

Being something of a sports nerd who was captivated reading *Moneyball* and watched videos of Sloan Conference panels online, eventually I connected the dots and proposed we convene a sports analytics conference here in Stevens Point. With encouragement from former College of Letters and Science Dean Christopher Cirmo and Outreach Program Manager Julie Hellweg, we forged ahead with the idea.

In the back of our minds, the conference would at some point evolve into a forum for broader data analytics topics. That some point is this year. Thanks to the work of our Sentry Insurance Endowed Chairs in Computational and Business Analytics, Kurt Pflughoeft and Eduardo Rodriguez, the third iteration of this conference features far more than sports: business, health care, risk, dairy, biology, and other analytics. We may have dropped two words from the conference name, but we added a lot more!

From beginning to end, we have packed the conference with educational and networking opportunities. Ask questions. Introduce yourself to someone you don't know. Share what you learn. Don't be shy!

A sincere thank you to our Continuing Education and Outreach colleagues, particularly Dotty Mansavage and Jennifer Hess, who helped organize things behind the scenes. In addition, the folks in University Centers and Dining and Summer Conferences have worked hard to ensure your visit to campus is a comfortable one.

Once again, thank you for helping us make the Great Lakes Analytics Conference a success, we hope you enjoy your visit to Stevens Point.

Sincerely,
Scott Tappa @scotttappa
Conference Director

Presentations

8:35-9:20 a.m.

Jeffrey Polzer

UPS Foundation Professor of Resource Management | Harvard Business School

People Analytics: When Meetings Multiply – The Consequences of Collaboration Overload

Collaboration is a key ingredient to organizational performance, yet employees in many companies struggle to achieve the right balance of collaborative activities. A common problem occurs when employees collaborate in frequent and time-consuming ways that interfere with productivity. To study this problem, we develop hypotheses about how meetings and email -- two common conduits of collaboration -- increase organizational performance up to a point, beyond which they have diminishing and then negative returns. We test these hypotheses with a novel dataset containing firm-level meta-data on meetings and email in 216,096 de-identified organizations. We find that meeting and email behavior each exhibit an inverted U-shaped relationship with firm revenue, providing the first evidence of this phenomenon across a large sample of organizations. The harmful effect of too many meeting hours on performance is amplified in firms that also have high levels of email activity. Meeting and email activity combine to influence multi-tasking, the phenomenon of sending emails during meetings, which, when overdone, is negatively associated with revenue. We discuss the theoretical and managerial implications of these results for the relationship between collaboration and performance.

This presentation will situate this study within the emerging field of People Analytics, which refers to a data-driven approach to managing and developing employees. Companies are rapidly adopting this approach, which is also called Talent Analytics or HR Analytics, to complement their traditional practices for making hiring and promotion decisions, increasing employee engagement and retention, measuring team processes and performance, and related use cases. This trend is being fueled by the rise of digital work, through which many day-to-day employee activities generate vast amounts of data that can be used to understand patterns of employee productivity, engagement, collaboration, and turnover. In turn, the use of employee data raises a host of issues around employee privacy, organizational culture, and the future of work.

Jeff Polzer is the UPS Foundation Professor of Human Resource Management in the Organizational Behavior Unit at Harvard Business School. He studies how people collaborate in teams and across organizational networks to accomplish their individual and collective goals. He has ongoing projects in collaboration with a number of organizations, often working with members of their people analytics groups on problems of mutual interest. He has taught a variety of courses in the MBA, Executive, and Doctoral Programs at HBS, and published his research in numerous top management and psychology journals.

Professor Polzer currently teaches “Leading with People Analytics” as an elective MBA course and in the Harvard Business Analytics Program for executives. He has conducted executive training sessions for a variety of organizations including IBM, Novartis, AT&T, First Abu Dhabi Bank, and Mercy Corps. At HBS, he has received the Robert F. Greenhill Award for outstanding service, the Apgar Award for Innovation in Teaching,

the Charles M. Williams award for his work with doctoral students, and the Wyss Award for Excellence in Doctoral Mentoring.

A native of Wisconsin, Professor Polzer earned a B.S. in Finance and Economics from the University of Wisconsin-Stevens Point and an MBA from Texas Christian University. He received his Ph.D. in Organizational Behavior from the Kellogg Graduate School of Management at Northwestern University.

9:30-10 a.m.

Kurt Pflughoeft

Sentry Insurance Endowed Chair of Computational Analytics | University of Wisconsin-Stevens Point

Using Data Blending to Create More Powerful Linkages

Data blending technologies coupled with machine learning can greatly expand the market researcher's toolkit. In this research, data blending allowed geospatial, demographic and firmographic data to be easily combined with the client's sample and survey data. From a vast array of variables, a predictive model was created to estimate revenues for gasoline stations including convenience store sales. The linkage allowed the client to hone-in on important variables and determine the conditions and actions that leads to higher revenue.

Kurt Pflughoeft is the Sentry Insurance Endowed Chair of Computational Analytics at the University of Wisconsin-Stevens Point. He has more than 20 years of industry experience applying data science techniques in his past roles as the Chief Analytics Officer at MaritzCX and the Head of Marketing Sciences at Market Probe. At both these jobs, he won Corporate Innovation Awards by solving difficult client problems with advanced techniques.

Prior to his work as a data scientist, Dr. Pflughoeft served as the CIO for Market Probe, an international market research company. He led the transformation from snail mail/phone surveys to web surveys and finally mobile questionnaires. Additional efforts included the automation of the sampling and reporting processes. He also was instrumental in setting up the Bangalore IT center and led the efforts on security as a CISSP.

Fangda Liu

Assistant Professor, Department of Statistics and Actuarial Science | University of Waterloo

Impact of Preferences on Optimal Insurance in the Presence of Multiple Policyholders

In the optimal insurance literature, one typically studies optimal risk sharing between one insurer (or reinsurer) and one policyholder. However, the insurance business is based on diversification benefits that arise when pooling many insurance policies. In this paper, we first show that results on optimal insurance that are valid in the case of a single policyholder extend to the case of multiple policyholders, provided their insurance claims are independent. However, due to natural catastrophes, increasing life expectancy and terrorism events, insurance claims show tendency to be correlated. Interestingly, in the case of interdependent insurance policies, it may become optimal for the insurer to refuse selling insurance to some prospects, based on their attitude towards risk or due to their

risk exposure characteristics. This finding calls for government policies to ensure that insurance stays available and affordable to everyone.

Fangda Liu is an assistant professor at the University of Waterloo, where she got her Ph.D. in actuarial science. She specializes in optimal (re)insurance design, risk sharing, risk measures and their applications in insurance markets. She is also an associate fellow of the Society of Actuaries.

Holly Schmies and Beth Kinslow
Associate/Assistant Professors of Athletic Training | University of Wisconsin-Stevens Point

Can VR Training Translate to Improvements in Cognitive and Physical Performance? A Research Collaboration with Sense Arena

An introduction to a research project examining the impacts of VR training to on-ice performance. This project is utilizing Sense Arena -- an immersive virtual reality system developed with the intent to develop the 'brain' muscle for synchronized development of physical and mental skills. The presentation will discuss further research applications utilizing VR for injury prevention and rehabilitation for safe return-to-sport.

Beth Kinslow is an Assistant Professor at UW-Stevens Point in the School of Health Care Professions. She received her bachelor's degree in athletic training from UW-Stevens Point in 2002 and her master's in exercise and sport psychology from Oregon State in 2006 and her doctorate from Rocky Mountain University of Health Care Professions in 2017. Dr. Kinslow's research interests include decreasing fear of failure in academics, psychosocial implications in athletics and future of virtual reality in athletic training.

Holly Schmies is an Associate Professor at UW-Stevens Point in the School of Health Care Professions. She has also been the Program Director for Athletic Training since 2007. Dr. Schmies received her bachelor's degree in athletic training from UW-La Crosse, her master's degree in educational administration from UW-Madison, and her PhD in education from Capella University. Her research interests include collaborative faculty development, concussion education and prevention, injury prevention and rehabilitation in athletic training.

Ben Garski
University of Wisconsin-Milwaukee

NCAA Division III Football Winning Predictors – Regression and Classification

The neglected NCAA Division III football will be analyzed for its worth as well as to draw attention to an area where young analytics professionals have an opportunity to get their foot in the door with experience more easily than they could at Division I universities. Multiple regression will be used to find important variables for winning, logistic regression will try to predict if a team has a winning record or not, and K-Means will attempt to cluster teams.

Ben Garski has worked in information technology at Thrivent Financial and Access Inc., performed analytics work for the University of Wisconsin-Oshkosh football team, and

most recently has been working in the Northwestern Mutual Data Science Institute. He is currently working toward a Master of Science in Information Science and Technology at UW-Milwaukee.

10:05-10:35 a.m.

Randy Guse

Director, Artificial Intelligence and Machine Learning Research | United Health Group

Delivering Business Value with Data Science

Many data science projects don't create the anticipated business value. There are numerous places projects can get derailed. This presentation will review some of the common places projects run into roadblocks and discuss strategies for successful data science projects that deliver business value. Attendees will learn to identify common challenges that prevent data science projects from creating business value; outline roles beyond data scientist required for successful projects; and take away strategies for delivering successful data science solutions.

Randy Guse is director of Artificial Intelligence and Machine Learning, Research and Strategy for Optum Enterprise Analytics. He is responsible for AI/ML knowledge development, advancing the analytic maturity of the organization. Prior to joining UHG, Randy designed and managed delivery of analytic solutions for clients in a variety of industries including financial services, retail, hospitality, transportation, communications and technology. He holds a master's in statistics from the University of Minnesota.

Denise Christophel

Director of Advanced Analytics | Sentry Insurance

Uncovering Future Customers: Prospect Models for Commercial Insurance

Sentry Insurance has built models that are applied throughout the insurance sales cycle to predict the likelihood a commercial business will purchase Sentry Insurance. These models are used to help the Sentry sales force determine where to focus their time for the highest chance of success. In addition to more traditional predictive variables, sentiment analysis was performed on customer interaction data and incorporated into some of the inputs to the models. Multiple modeling methods including GLM, neural net, random forests (grid search, adaptive boosting, and extreme gradient boosting methods), and bagged decision trees were tested, as well as various ensemble and stacking scenarios. Overview of the project, comparison of model results, and discussion of how these models are used in practice to improve future sales results will be shared.

Denise Christophel is a director of advanced analytics at Sentry Insurance. She leads a team of talented individuals who provide analytics and business intelligence solutions for commercial lines insurance and other areas within Sentry. Her educational background includes a MS in statistics from Oklahoma State University and a BA in psychology from University of Northern Iowa. She was also an inaugural recipient of the Certified Specialist in Predictive Modeling (CSPA) credential through the CAS Institute and is currently Vice Chair of the CSPA Continuing Education Committee. Prior to joining Sentry Insurance in 2010, Denise spent 11 years working for FICO where she was involved with the development of FICO credit models, credit-based insurance scores, and custom models for both insurers and banking clients.

Chris Malone
Professor, Data Science and Statistics | Winona State University

The Evolution of an Undergraduate Data Science Program – A Reflection on the Past Five Years

Data science is a discipline that has emerged quickly and many colleges and universities have tried to keep pace by launching programs in data science. This presentation will include a brief discussion of the process used to develop the data science program at Winona State University back in 2014. Much of the discussion will focus on the changes that have been made to our program over the past five years with the goal being that sharing our experiences may help you avoid making some of the same mistakes in continuing to develop your undergraduate data science curriculum.

Chris Malone has taught statistics and data science to undergraduates over the past 20 years. Malone has worked diligently in the area of statistics education for the past 20 year. Malone served as a committee member for the most recent revision of the American Statistical Association's Curriculum Guidelines for Undergraduate Programs in Statistical Science. Over the past seven years, Malone's work has included the development of curriculum for the teaching of data science to undergraduates.

Ashlyn Hartman
Millikin University

Predicting Players' Performance in the National Football League

This study shows the factors that determine the players' performance (lifetime earnings) by using data such as college statistics, NFL Combine data, and NFL draft results grouping based on position. Attendees will learn more about the impact of Combine stats on future salary.

Ashlyn Hartman is a senior mathematics concentration in data science and sports management student at Millikin University. She plays volleyball and runs track at Millikin. Ashlyn has a passion for sports analytics and hopes to apply both degrees in her future career.

10:45-11:15 a.m.
Keith Chrzan
SVP | Sawtooth Analytics

Trees, Forests and Situational Choice Experiments

Situational choice experiments model questions eliciting a multichotomous response to a single profile using unconditional logit; for example, in pharmaceutical research a multi-attribute profile might describe a patient and the choice might be among several fixed therapy alternatives. Using data from 12 situational choice experiments we compare out-of-sample predictive validity, using 10-fold cross-validation, of unconditional logit and several decision tree models, including CART, random forests and catboost.

Keith Chrzan has 30-plus years of well-rounded experience in the marketing research industry. Methodologically sophisticated, Keith communicates research results, implications and limitations comfortably and clearly to business professionals. At Sawtooth Software Keith leads the Sawtooth Analytics group of analytical consultants,

leveraging Sawtooth Software's products and general methodological and modeling expertise for client projects. Previously SVP/chief research officer at Maritz Research, Keith led an extraordinary group of 20 marketing scientists. He has also served as VP of marketing services at IntelliQuest, Inc., and held client-side research positions at Boehringer Mannheim Diagnostics and Bayer, Inc., and a management consulting position at ZS Associates.

Eduardo Rodriguez
Sentry Insurance Endowed Chair of Business Analytics | University of Wisconsin-Stevens Point

Risk Analytics: Integration of Disciplines and More

The analytics process enables the use of computational and analytics capabilities to create meaningful knowledge and value from data. During the last decades, the use of technology and access to data in different forms and sources have allowed the use of methods and techniques to support the risk management process. Integration of analytics and risk management is crucial for supporting the understanding of risk in organizations and its impact in strategy and operation. Activities in risk identification, assessment, pricing, monitoring and control can be enhanced and developed using analytics, IoT, text mining, web mining, and more sophisticated algorithms and methods in statistical and machine learning. In this talk we will review what type of problems in risk management can be tackled using analytics techniques with and without big data. We will provide examples of what is required from analytics to support risk management practice such as strategic risk analysis, credit risk and its targets definition or practice different settings as it is in international businesses, operational risk and quality assurance, and financial risk and the impact of opinion and sentiment in investment decisions. The aim of this presentation is to introduce risk analytics as an area of research development and a management orientation where the risk management responsibility be not only on the shoulders of one organizational area but also and mainly as part of the whole enterprise and its stakeholders. To achieve a real risk management culture requires analytics and artificial intelligence risk management systems integrated into operational/business processes across the organizations. Thus, the implementation of the risk analytics process will lead the design of systems that combine quantitative (modeling) and computational capacity to improve productivity and accuracy in monitoring, measuring and mitigating risk.

Eduardo Rodriguez joined the School of Business and Economics in the fall of 2017 as the Sentry Insurance Endowed Chair in Business Analytics at the University of Wisconsin-Stevens Point. Prior to UW-Stevens Point, he was an analytics adjunct professor at Telfer School of Management at Ottawa University, corporate faculty of the MSc. in Analytics and ISEM MSC at Harrisburg University of Science and Technology Pennsylvania USA, senior associate-faculty of the Center for Dynamic Leadership Models in Global Business at The Leadership Alliance Inc. in Toronto, Canada, and principal at IQAnalytics Inc. Research Centre and Consulting Firm in Ottawa, Canada. Eduardo has extensive experience in analytics, knowledge and risk management mainly in the insurance and banking industry. He has been a visiting scholar at Chongqing University in China and Risk Monitoring Professor in the Master of Risk Management at EAFIT University in Colombia.

He has been a knowledge management advisor and quantitative analyst at EDC Export Development Canada in Ottawa, regional director of PRMIA (Professional Risk Managers International Association) in Ottawa, vice-president of marketing and planning for insurance companies and banks in Colombia, professor at Andes University and CESA in Colombia, author of six books in analytics, and reviewer of several journals. He created and chaired of the permanent Think-Tank in Analytics in Ottawa, was chair of the International Conference in Analytics ICAS, member of academic committees for the European and International Conferences in Knowledge Management, and international lecturer in the analytics field.

Justin Shelton

CTO | Pivot Analysis

Ball Don't Lie: Extracting the Analytical Truth from Basketball Games

Plain-looking text can sometimes be a gold mine for analytical information, but that text is not exactly a well-formed API. We will go in depth on how we tackle the problem of tagging basketball plays for the purposes of advanced metrics, how we present those metrics, and what to do when the data is a lie. Attendees will learn event modeling for human-readable text; what metrics and advanced calculations are possible with seemingly basic data; and data triage/human input on ground-truth data.

Justin Shelton is the CTO of Pivot Analysis, a company dedicated to basketball analytics. He helped create and maintains a system for tracking advanced basketball analytics, showcasing the effects of players on their teams and surfacing team insights for coaches and analysts. Before coming to Pivot, Justin spent 11 years in the defense and intelligence communities helping analysts create better products from their data. Justin is a Virginia native, but family drew him to Wisconsin where he now resides with his wife and two kids. He has a bachelor's degree in Computer Science from Radford University in Virginia.

11:20-11:50 a.m.

Nadine Castellano

Vice President of Client Development | Market Probe

Visualizing Attribute Importance to Enhance Managerial Decision Making

Attribute importance is a difficult concept as it can be in the eye of the beholder. Most people may think of absolute importance even though relative importance may be more applicable to management. Importance may also vary depending upon the outcomes that are considered. In this talk, the pros and cons of numerically deriving importance are discussed. Some derived techniques require active experimentation while others work with passive observations. A case study is used to show potential differences in derived importance techniques including correlation, beta's, combinatorial importance, Johnson's Epsilon and Random Forest measures.

Nadine Castellano is vice president of client development at Market Probe, a global market research firm specializing in satisfaction, loyalty, and customer experience. She has taught marketing research at the University of Wisconsin-Milwaukee, focusing on multivariate techniques and their role in research storytelling. Nadine has also taught introduction to marketing while in pursuit of a PhD at the University of Iowa. She is the

recipient of the Marketing Science Institute's Alden G. Clayton Dissertation Proposal Award. Nadine earned a Bachelor of Science degree from the University of Wisconsin-Madison and an MBA from the University of Iowa.

Daniel Bauer

Hickman-Larson Chair in Actuarial Science | University of Wisconsin-Madison

A Least-Squares Monte Carlo Approach to Estimation of Enterprise Risk

The estimation of enterprise risk for financial institutions entails a reevaluation of the company's assets and liabilities at some future point in time for a (large) number of stochastic forecasts of economic and firm-specific variables. Relying on well-known ideas for pricing non-European derivatives, the current paper discusses tackling this nested valuation problem based on Monte Carlo simulations and least-squares regression techniques. We formalize and analyze the algorithm in an operator setting. Importantly, we address the problem of how to choose the regressors ("basis functions"), and show that a robust choice is given by the left singular functions of the corresponding conditional expectation operator. Our numerical examples demonstrate that the algorithm can produce accurate results at relatively low computational costs, particularly when relying on robust basis functions.

Daniel Bauer specializes in the development of models for the valuation and risk management of insurance products and insurance-linked securities. His research publishes in leading journals in actuarial science, finance, management, and statistics, and he serves on the editorial boards of several journals in actuarial science and risk management. Daniel teaches classes in actuarial science, quantitative finance, and data analytics, and he serves as a co-director of the Master in Business Analytics at the Wisconsin School of Business. Daniel received his doctorate in mathematics from Ulm University, from where he also holds a diploma in mathematics and economics. Furthermore, he obtained an M.S. degree from San Diego State University, where he studied statistics as a Fulbright scholar. Prior to joining the faculty at UW-Madison, Daniel was on the faculties at the University of Alabama and Georgia State University.

Kyle Allen

Boys Basketball Coach | Pine City (Minn.) High School

Program Purposefulness: Using Analytics in High School Basketball

Kyle Allen has been head boys basketball coach at Pine City (Minn.) for eight years, during which time the Dragons have received statewide and national attention from the likes of the Wall Street Journal, Basketball Pro Talk, KFAN Radio and Fox 9, among others. The reason: the program's philosophy and use of data disaggregation.

According to an article in MSHSL's John's Journal, "Mathematics is a big part of (Allen's) job as head coach of the Dragons boys basketball team. That's because everything is measured and charted: not only the typical things like shooting percentages and rebounds, but also talking. Yes, the Dragons keep track of talking. And that's just the start of what makes this basketball team unlike any other. The most visible example: They rarely shoot two-point shots other than layups, and focus on firing from outside the three-point line. It's all based on math."

After posting a 24-56 record in Allen's first three seasons, Pine City has earned an 195-36 record over the last five, capturing its two conference title in a decade before falling in the section semifinals two of the past three years. This presentation will explore how one program became more purposeful by using statistics and making everything they did transparent.

Bruce Liska
Park View High School

An Analysis of Which City Gets the Most Discounted Pizza Based on Team Records and Scores

Whenever a sports team wins and does scores "x" amount of points, that city will receive 50% off Papa John's pizza the next day. To determine which city is the best to live in based on these discounts (Most 50% off Papa John's days), Bruce will scrape data from different websites for five years' worth of scoring logs, and find the qualifications to get the 50% off Papa John's promo code.

Bruce Liska is a high school student with a passion for sports and statistics. He started watching sports when his stepmother bought his father tickets to a Steelers game, and hasn't stopped watching. He has been studying ways to apply statistics to sports, and has presented at Carnegie Mellon University's Sports Analytics Conference.

1-1:45 p.m.
Joseph Retzer
CRO/Faculty Member | ACT Market Research Solutions/University of Wisconsin-Milwaukee

Building a Recommender System in R

Consumers rely on recommender systems more than ever before. Some examples include:

• Facebook, Twitter, LinkedIn: Suggest people you might also know to expand your social media network
• Amazon: Points you to products that you might also consider when you are purchasing a particular item
• Last.fm, Spotify, Pandora: Suggest songs that are aligned with your musical taste
• Netflix: Suggests movies you may enjoy based on viewing habits.

Recommender systems are a useful alternative to search algorithms since they help users discover items they might not have found otherwise. This talk will outline various types of recommender systems including ratings and content based collaborative filtering as well as common market basket analysis. Illustrations of their estimation in both the statistical programming language R (e.g. arules & recommenderlab) as well as Microsoft Azure Machine Learning Studio (matchbox) will also be presented.

Joseph J. Retzer is currently CRO at ACT Market Research Solutions and a faculty member of the Lubar School of Business at UW-Milwaukee. He has more than 25 years of experience in market research analytics. During this time, he has developed innovative statistical techniques in areas including key driver measurement in the presence of collinearity, prediction in covariance structure models, modeling of behavioral loyalty

using survival analytic techniques, genetic algorithm-based segmentation and Bayesian inference.

He is the 2004 corporate "Mark of Excellence in Research Award" winner at Maritz Research. He has taught statistics, economics, and management science curricula at the University of Wisconsin-Milwaukee. He has also won best presentation awards at both the Sawtooth Software market research and AMA ARTF (Advanced Research Techniques Forum) conferences.

2-2:30 p.m.
Cheong Ang
Co-Founder and CTO | Lucidact Health

A Practical Way to Deploy AI Into Healthcare Workflows and Enable Continual Learning

Bringing the benefits from AI efforts to the frontline workers continues to be a struggle across major healthcare organizations. We worked on a novel, practical approach to directly take on the workflows of healthcare workers. This session shares the learning and accomplishments in our attempts, and the AI's introduced via this approach to achieve efficiency and outcome goals. This practical workflow approach uses AI as tools, hence can deploy various AI's for a variety of problems, including patient status tracking and task automation. AI's being directly in the workflow also enables continual learning, process improvement, and optimization toward specific goals.

Cheong Ang has been a hands-on leader in web, data, and healthcare IT for two decades. His work on web interactivity at UCSF Medical Center resulted in patented technologies licensed to leading firms, including Microsoft, Oracle, and Adobe. At IBM, he led teams in developing software for predictive analytics in e-commerce and knowledge management, and implementing data projects for clients in healthcare and financial industries.

He has been in director positions in charge of operating a targeted advertising system, and building and marketing a broadband video delivery system. He has also been engaged for healthcare business and innovation strategy consulting at Konica Minolta Business Innovation Center, and San Francisco General Hospital. Most recently, he brought together a team to bridge the gap between AI and the frontline workers with a SaaS system that enables engaging collaboration, automation of workflow tasks, and continual improvements toward organizational goals. The system is smart about various workflows, including Chronic Care Management and Remote Patient Monitoring, and is currently serving tens of thousands of patients at multiple healthcare organizations.

Chris Schumacher
Senior Actuary | Church Mutual Group

Stakeholder Buy-In and Predictive Analytics

There are many predictive methods available to predict any number of target variables. Chances are, if you want to predict it, you can find a mathematical construct that can handle it and a person or team to build it. The most predictive model in the world may also be the most worthless if your stakeholders do not buy into it. This discussion focuses on building and implementing predictive analytics while engaging your key stakeholder groups. Church Mutual has undergone a significant analytical transformation since 2011

with many valuable lessons learned. Since 2011, Church Mutual has experienced significant profitable growth increasing its Gross Written Premium by 44% and Surplus by 65%. This discussion focuses on lessoned learned through such an analytical transformation.

Chris Schumacher is a senior actuary for Church Mutual Group and leads the predictive analytics team. This team provides analytical solutions to drive optimal pricing, risk selection, or other decisions for Church Mutual Group. Chris is a fellow of the Casualty Actuarial Society, an early recipient of the Certified Specialist in Predictive Analytics credential, has a specialization in deep learning, and is a member of the American Academy of Actuaries. Chris has a degree from UW-Stevens Point, with majors in mathematics with an actuarial emphasis and business administration. He was recognized in 2019 for the inaugural Emerging Leaders Conference hosted by PCI, the Insurance Careers Movement, and A.M. Best. Before joining Church Mutual Group in 2012, Chris worked for Liberty Mutual Group. His actuarial career has spanned a number of responsibilities including: predictive analytics, reserving, large account pricing, division actuary, ratemaking, and product management.

Ron Righter

Senior Industry Consultant, Higher Education Athletics Analytics | SAS

Rebooting College and High School Basketball Coaching Strategies

The game of basketball continues to change at a rapid pace. With the rise of data collection and analytics, new methods of individual skill development, scouting, recruiting, practice planning and game strategy stand to change. How will the windfall of new information help the basketball coach make better decisions, and build and maintain a successful program.

Ron Righter has been a successful college basketball coach for more than three decades. He has seen first hand the bright lights of the Big Ten, Pac 12, the venues of Division II and III, and the NCAA basketball tournament as both a player and a coach. Ron has coached more than 500 players from diverse backgrounds, and through his camps and clinics, he has spoken to thousands of young people and parents about qualities such as: character, leadership, teamwork and sportsmanship.

Brad Leshinske

Exercise Science Coordinator/Director of Human Performance
Saint Xavier University/Primetime Sports Performance

The Meaning Behind the Numbers: A Look at Assessments and What They Actually Mean

As data analytics have become more mainstream over the last five years, we can not lose sight of what the numbers mean. Research has validated evaluations as basic need of program design success; however, how do we look past the data and use the numbers properly for programming. Attendees will learn to identify what evaluation tools to use for proper program design and investigate ways to communicate with parents and coaches about what data means.

Brad Leshinske has been a strength and conditioning coach for the last 14 years. He has worked with youth, high school, college and professional athletes in every major sport. He currently owns Primetime Sports Performance, which serves as the strength and

conditioning providers for Adversity Volleyball, St. Laurence High School and private clients in our Mount Prospect location. Brad is also the coordinator of exercise science and sports fitness administration at Saint Xavier University.

2:40-3:10 p.m.

Greg Robinson

Chief Data and Analytics Officer | Marshfield Clinic Health System

Influencing Patient Behavior Change Using AI

This talk will explore the use of Natural Language Processing (NLP), causal inference modeling, and linear regression in a healthcare setting to help influence behavior change in cancer patients. Additional dimensions covered will be the use of the same data, when aggregated, by population health management and clinical researchers for the optimized use of limited care delivery resources with the goal of reducing costs of care. The constructs of an app-based platform using Python, and Qlik for visualization that was developed for use for clinical research and accountable care organizations by the presenter will be discussed.

Greg Robinson is the Chief Data and Analytics Officer at Marshfield Clinic Health System. He has previously served as CIO/COO at the Connecticut Department of Corrections, CTO and co-founder at A Health Adventure, and has served in other senior executive analytics and technology roles. Greg earned his PhD in Health Economics from the University of California, Berkeley.

Dan Graf

Associate Professor of Biology | University of Wisconsin-Stevens Point

Big Data and Biodiversity Research: An Example from the MUSSEL Project Database

The MUSSEL Project Database (MUSSELpdb) provides a useful interface between the centuries of specimen and bibliographic data accumulated by people and the power of machines to manage, synthesize, and analyze those data. This talk will explore the impact of the MUSSELpdb on our understanding of the evolution and biodiversity of freshwater mussels, an interesting and highly imperiled group of aquatic invertebrates. Attendees will learn to understand the types and sources of data that are utilized in biodiversity research; recognize how a well-normalized database can organize data for people and machines; and identify resources available to organize and analyze biodiversity data.

Dan Graf has degrees from the University of Minnesota, Northeastern University, and the University of Michigan and served as curator of mollusks at the Academy of Natural Sciences of Philadelphia. In 2012, he joined the faculty of the Department of Biology at UW-Stevens Point.

Rick Spellerberg and Vicki Hamdorf

Iowa Center for Interdisciplinary Training

The Basketball Data Analytics Battle Competition

The Basketball Data Analytics Battle is a grades 6-12 competition that introduces students and teachers to the world of data analytics. Using qualifying team data for the 2013-2019 NCAA basketball tournaments, students create an algorithm that predicts the 10 teams that have the best chance of winning the 2020 tournament. This talk will

introduce the audience to the competition and provide outcome information from the 2018 and 2019 competitions. Attendees will be introduced to the building of a predictive model in a real-world setting.

Rick Spellerberg earned a BA degree from Coe College in 1984 majoring in mathematics and physics and went on to the University of Iowa to earn a PhD in mathematics in 1990. He started his mathematics teaching career in the fall of 1990 at Simpson College and taught there for 26 years. He left Simpson to start a non-profit called the Iowa Center for Interdisciplinary Training to be in a better position to provide K-12 outreach and address several sustainability related challenges facing higher education and rural America.

Vicki Hamdorf has taught mathematics in grades 6-12 for 34 years. She also teaches at the Iowa Center for Interdisciplinary Training, where she works to promote the Basketball Data Analytics Challenge. She was a coach for a First Tech Challenge Robotics team for 10 years and founded the "90 Degree Club," a math club for high school students. Vicki has presented at the ICTM and NCTM conferences.

Jessica Kraker
Professor Department of Mathematics| University of Wisconsin-Eau Claire

Applying Mid-Season Dynamics and Updated Player Statistics to a Local Collegiate Baseball League

Researchers gathered and analyzed statistics and cumulative records of the collegiate summer Northwoods Baseball League to explore whether and how various new metrics (originally developed for Major League Baseball) might translate to a new context. Based on information about team dynamics over the season, we discuss amendments to the original model (single Bradley-Terry predictions), as well as options for integrating individual player statistics. Note that player statistics must be based on historically available data; while this to some extent limits the scope of available measures, we were able to compute a good breadth of new statistics and to compare those to historic measures.

Jessica Kraker received her Ph.D. in statistics from the University of Minnesota, with an emphasis in computational statistics. She has taught statistics for 14 years at UW-Eau Claire and has been teaching for four years in the data science program through the University of Wisconsin System. Her areas of interest are penalized regression, cross-validation, and sports analytics.

3:20-3:50 p.m.
Reese Edwards
Healthcare Industry Consultant | SAS

Why Advanced Analytics in Healthcare Matters

Descriptive, predictive and prescriptive analytics refers to the process of applying statistical methodologies to data to better understand what has happened in the past and predict what's likely happen in the future with a certain degree of accuracy. How is that applicable to health care? Possibilities include improving patient throughput and capacity, preventing hospital-acquired infections, and even early identification and proactive management of patients who are at high risk for developing a disease or condition. Providing relevant insights to the right person at the right time and in the right

modality can change behavior and transform the health care experience. These moments of influence can change the way patients manage their health conditions or augment a provider's thinking, ensuring they make the best clinically relevant decisions for patients.

Reese Edwards is a healthcare industry consultant at SAS working on strategic initiatives and public policy issues with public and private sector customers. Reese is a strong advocate for the role of analytics in improving the health care system. Reese lives in Denver and has served on various trade and non-profit boards.

Victor Cabrera

Professor and Extension Specialist in Dairy Farm Management | University of Wisconsin-Madison

Developing a Dairy Brain: The Next Big Leap in Dairy Farm Management Using Coordinated Data Ecosystems

Dairy farms have embraced technological innovations and procured vast amounts of data but integrating these data to improve whole farm-based management and decision-making has proven challenging. It is imperative to move toward systems that can collect, integrate, manage, and analyze relevant data (genetics, nutrition, reproduction, replacement, market prices, weather, etc.) in real-time and provide inferences and learning to maximize economic margins and reduce environmental impact. Attendees will learn more about data management on dairy farms, rationale for real-time data integration framework, and potential decision-making improvements of interconnected data pipelines.

Victor Cabrera is a professor and extension dairy specialist in dairy management at the University of Wisconsin-Madison Dairy Science Department. Cabrera combines applied research, interdisciplinary approaches, and participatory methods to deliver practical, user-friendly, and scholarly decision support tools for dairy farm management. These scientific tools are aimed to improve dairy farm profitability, environmental stewardship, and long-term sustainability of the dairy farm industry.

Kristof Kipp

Associate Professor | Marquette University

Neural Network Applications in Sports Performance Settings

This presentation will cover a range of examples that illustrate how machine learning models (e.g. artificial neural networks) can be applied to the different research problems that aim to enhance physical and sports performance.

Kristof Kipp joined the Marquette University Department of Physical Therapy, Program in Exercise Science in the fall of 2011. He received a PhD in Nutrition and Exercise Sciences with emphasis in biomechanics from Oregon State University and completed a post-doctoral research fellowship at the University of Michigan. Dr. Kipp's primary research interests focus on the prevention and rehabilitation of musculoskeletal injuries. To this end, Dr. Kipp's research projects use various combinations of biomechanical and electrophysiological techniques.

Thomas Rhomberg
Data Analyst | Loras College

Application of Analytics and Visualization in Division III Men's Basketball

This presentation will provide a look inside the analytic methods used by a Division III basketball team and how the team uses these methods to make more informed decisions. It will also describe and provide examples of the ways the team finds actionable results from this data analysis. Attendees will learn data collection methods in R, visualization in Tableau and ggplot2, and expected values of player statistics.

Thomas Rhomberg is a senior at Loras College studying business analytics and math. He has been working as a data analyst for the men's basketball team since his freshman year and now leads a small team of analysts.

4-4:30 p.m.
Karen Monsen
Professor, Population Health and Systems Cooperative Unit | University of Minnesota

Data Visualization in Healthcare Analytics: Exemplars in Nursing Research and Practice

The fields of cognitive science and cognitive psychology have identified how the human primary visual cortex is more effective and efficient at comparing variables, identifying patterns, and distinguishing relationships with shapes and colors than with numbers. Thus, data visualization is a desirable strategy for use in exploring large datasets. The following data visualization techniques were developed by nursing research teams using D3, Tableau, and Microsoft Excel and demonstrate how data visualization can be used to generate knowledge and gain new insight into the quality of nursing care. D3 is a JavaScript library for creating interactive data visualizations using web standards for programming such as HyperText Markup Language (HTML), Scalable Vector Graphics (SVG), and Cascading Style Sheets (CSS). Tableau is proprietary software that can interact with relational databases, cubes, cloud databases, and spreadsheets to generate graphs. Microsoft Excel is a spreadsheet application developed by Microsoft that has robust graphing tools. Examples developed using these tools such as stream graphs, heat maps, sunbursts, parallel coordinates, multi series line graphs, control charts, and line graphs with trend lines will be shared, together with an explanation of the purpose, features (attributes), results, interpretation, and technical notes accompanies each example.

Karen Monsen is a professor at the University of Minnesota School of Nursing where she coordinates the DNP Nursing Informatics specialty and directs the Center for Nursing Informatics. Her expertise is in public health nursing and nursing informatics, and her intervention effectiveness research employs diverse methods including theory-based analysis, data mining, visualization and longitudinal analysis. Dr. Monsen leads the Omaha System Community of Practice and is the Director of the Omaha System Partnership for Knowledge Discovery and Health Care Quality within the Center for Nursing Informatics. She has worked extensively with health care agencies and systems regarding documentation issues and data management.

Andres Alvarez
CEO | Nerd Numbers

Solving the NBA's Tanking Problem Via a New Draft Model

The NBA's draft model inadvertently incentivizes teams to make poor decisions. This negatively impacts the NBA product. We present a model using betting odds, and an ELO rating system to make the draft fulfill its intended purpose while encouraging better NBA play. Attendees will gain an understanding of the NBA draft, its flaws, and statistical incentives for teams; an understanding of betting models and importance on the NBA and its business; and the importance of incentives in policies for sports leagues.

Andres Alvarez is a software engineer who works in analytics and sports data. Andres has his masters degree in computer science from Colorado State University. He has worked at HP, IBM, and Google, and has been a hobbyist in sports analytics for a decade. He was the editor and lead writer at the Wages of Wins Journal blog, and currently writes and podcasts at the Boxscore Geeks.

Matt Kretchmar
Associate Professor of Computer Science | Denison University

Measuring Equity in High School Cross Country Running

We study the how the enrollment size of a high school affects its ability to compete fairly in cross country distance running. We build a statistical model of high school runners and use Monte Carlo simulations to explore the potential advantages that larger schools have over smaller programs. Attendees will develop an understanding and appreciation of how enrollment size impacts competitive equity in schools; understand how Monte Carlo simulations work and can be applied to sports analytics; and experience an example of using data collection to build a statistical model used in simulation.

Matt Kretchmar is an associate professor of computer science at Denison University. His research areas are machine learning, artificial intelligence and recreational mathematics. He has also served as Denison's dean of first year programs and director of the writing program.

Data Analytics at UW-Stevens Point

Central Wisconsin employers in retail, manufacturing, health care, agriculture, insurance and software development industries identified a growing data analytics talent gap in the region. McKinsey Global Institute predicts the United States could face a shortage of up to 190,000 people with deep analytical skills. The firm projects a shortfall of 1.5 million managers and analysts with capabilities to use and analyze big data to make effective decisions. To address these workplace needs, the University of Wisconsin-Stevens Point launched a new undergraduate degree program in data analytics, beginning fall 2016. The curriculum integrates fields of business, computer science, economics, geographic information systems, mathematics and statistics. It is led by Sentry Insurance Endowed Chairs in Computational Analytics (Department of Computing and New Media Technologies) and Business Analytics (School of Business and Economics).

Career opportunities in data analytics

Graduates with a Bachelor of Science in Data Analytics will be prepared for such jobs as business analyst, business insights analyst, data analyst, data architect, data modeler, junior data scientist and research analyst, among others. Virtually every sector of the economy projects a need for data analysts: insurance, health care, finance, sales, government, information technology, construction, law enforcement, manufacturing, and marketing, among others. We also offer opportunities for students wishing to pursue a master's degree.

Building your résumé

Students completing the Bachelor of Science in Data Analytics degree program will demonstrate the following skills:

- Data Literacy. Demonstrate knowledge of various data types, attributes, sources and organization value.
- Data Preparation. Create, collect, automate, extract and harmonize data.
- Data Analysis. Use statistics, modeling, visualization and programming and data mining tools to analyze data.
- Data Communication. Translate analytic outputs for non-technical audiences. Interpret and communicate findings to build market intelligence and drive strategic decision-making.
- Data Governance. Understand data security, ethics and privacy issues and relevant regulatory and legal issues.
- Influence. Develop strategic thinking skills to make or support complex decisions, and deal with ambiguity.
- Team Participation. Function effectively on multidisciplinary and diverse teams.
- Curiosity. Cultivate curiosity and pursue continuous learning.
- Problem Solving. Translate analysis into timely, action-oriented systems thinking, problem-solving and recommendations.

In addition to the undergraduate data analytics program, UW-Stevens Point also offers an online master of science in data science degree program in collaboration with University of Wisconsin system partners. For more information visit www.uwsp.edu/dataanalytics.

About the University of Wisconsin-Stevens Point

UW-Stevens Point offers three welcoming campuses, Stevens Point, Marshfield and Wausau, in the heart of Wisconsin. UW-Stevens Point students discover inspiring professors, research and study abroad opportunities and dynamic programs that prepare them for a fulfilling career. UW-Stevens Point equips its students to live sustainably, think critically and realize long-term success in a diverse world.

Fast Facts

- Founded 1894
- 15 major academic and administrative buildings, including the new state-of-the-art Chemistry Biology Building
- 13 residence halls with Living-Learning communities and three student centers
- The 406-acre campus with 35 buildings, includes the 280-acre Schmeeckle Reserve with a 25-acre lake
- Located midway between Milwaukee and Minneapolis at intersection of Interstate 39/Highway 51 and U.S. Highway 10
- Three off-site field stations -- Central Wisconsin Environmental Station at Amherst Junction, Treehaven near Tomahawk and the Northern Aquaculture Demonstration Facility at Bayfield.
- University Mascot: Stevie Pointer
- University Colors: Purple and Gold

Academic Programs

- More than 100 program options within 80 baccalaureate degree programs, 90 minors, and 17 graduate programs in the College of Fine Arts and Communication, College of Letters and Sciences, College of Natural Resources and College of Professional Studies.
- Five-year program options that blend undergraduate and graduate degrees.
- Online courses, undergraduate and graduate degree programs, certificates and non-credit options.
- Continuing Education: credit and noncredit offerings for adults as well as youth offerings.

Economic Impact

According to a June 2019 study by NorthStar Consulting, UW-Stevens Point campuses generate:

- $671.3 million in total economic impact annually to Wisconsin's economy.
- $40.9 million in state and local tax revenue generated annually.
- For every $1 of state tax investment in UW-Stevens Point, there is $18.28 in economic activity in the state.

NOTES