THE FIELDS INSTITUTE

2015 WORKING LUNCH SEMINAR SERIES

Timothy Chan & Ming-Chang Tsai

Sports Analytics

TUESDAY JUNE 23, 2015, 11:00 A.M. • STEWART LIBRARY, FIELDS INSTITUTE

Part I: Timothy Chan

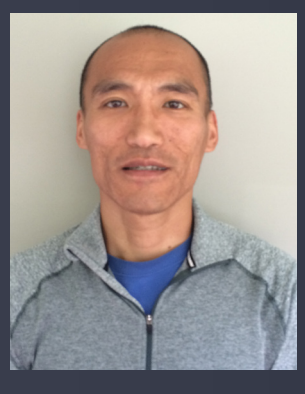
In this talk, Professor Timothy Chan will discuss some of his recent sports analytics research in hockey and baseball. In hockey, he and his students have developed a player classification system for both NHL and junior hockey players. This system can be used to estimate the contribution of different players to their team and to predict future performance. In baseball, he and a collaborator have developed a method to quantify the value of "flexible" players – those who can play multiple positions – which provides insight into which teams are more resilient to injury risk.

Timothy Chan is an Associate Professor in the Department of Mechanical and Industrial Engineering at the University of Toronto and Director of the Centre for Research in Healthcare Engineering. He received his BSc in Applied Mathematics from the University of British Columbia (2002), and his PhD in Operations Research from the Massachusetts Institute of Technology (2007). Professor Chan was an Associate in the Chicago office of McKinsey and Company, a global management consulting firm (2007-2009). During that time, he advised leading companies in the fields of medical device technology, travel and hospitality, telecommunications, and energy on issues of strategy, organization, technology and operations.

Professor Chan's primary research interests are in optimization under uncertainty and the application of optimization methods to problems in healthcare, medicine, global engineering, sustainability, and sports. He received the George B. Dantzig Dissertation Award from INFORMS (2007), an Early Researcher Award from the Ministry of Economic Development and Innovation of Ontario (2012), an Early Career Teaching Award from both the U of T Department of Mechanical and Industrial Engineering (2012) and the U of T Faculty of Applied Science & Engineering (2013), second place in the INFORMS Section on Public Programs, Service and Needs best paper competition (2012), and first place in the MIT Sloan Sports Analytics Conference research paper competition (2013). His research has been featured by the CBC, CTV News, the Toronto Star, and Canadian Business magazine.

Part II: Ming-Chang Tsai

Sport analytics is a rapid-growing field that is changing the way athletes train, prepare, and compete. Many professional sports (NBA, NFL, and soccer) are undergoing a "Moneyball period" in which technologies such as GPS, accelerometry, heart rate (HR) and video are used to monitor player positioning, movement, and physiological responses. Rugby has recognized the benefit of incorporating sport analytics to gain competitive edge over other teams and have been collecting speed, acceleration, and HR data in real-time with physiological data already being measured using standard laboratory and field-based methodologies. Discriminant analysis was used to identify performance indicators between winning and losing in basketball, while clustering and regression methods were used to characterize individual player's contribution to team's overall performance in hockey. At the recent Fields big data analysis workshop, researchers identified indicators that contribute to winning/losing/performance, athlete types based on their offensive and defensive behaviors, and athlete behavior within game. Preliminary insights in connecting physiological to tactical/technical data are being investigated as well.



Ming-Chang Tsai is a researcher in the Faculty of Kinesiology and Physical Education at the University of Toronto and a data analyst/sport scientist at the Canadian Sport Institute Pacific. He received his BASc in Engineering Science from the University of Toronto (1995) and his PhD in Exercise Sciences from University of Toronto (2015).

Ming has been coaching for 20 years in rowing, cycling, running, and triathlon. He was an elite rower competed around the world with the Chinese Taipei national team at World Cups, World Championships, Asian Championships, and Asian Games. After his elite rowing career was over, he started racing multisport and has represented Canada on several Age Group World Championship teams in Duathlon and Triathlon.

For more information, please visit:
www.fields.utoronto.ca/programs/cim/14-15/lunchseminar

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