Department of Computer Science
香港城市大學
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COMPUTER SCIENCE COLLOQUIUM

Trusted Decision Making in Sports Analytics

SPEAKER **Dr. Jin-Song DONG**

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TIME 11:00 AM - 12:00 PM

VENUE Y6405, CS Seminar Room, 6/F., Yellow Zone, Yeung Kin Man Academic Building, City University of Hong Kong, 83 Tat Chee Avenue, Kowloon Tong, Hong Kong

ABSTRACT

"Sports analytics encompasses the utilization of data science, artificial intelligence (AI), psychology, and advanced Internet of Things (IoT) devices to enhance sports performance, strategy, and decision-making. This process involves the collection, processing, and interpretation of cloud-based data from a variety of sources, such as video recordings, performance metrics, and scouting reports. The resulting insights aid in evaluating player and team performance, preventing injuries, and supporting coaches and team managers in making well-informed decisions to optimize resources and achieve superior outcomes. One widely recognized formal method, Probabilistic Model Checking (PMC), has been conventionally employed in reliability analysis for intricate safety critical systems. For instance, the reliability of an aircraft can be determined by evaluating the reliability of its individual components, including the engine, wings, and sensors. Our groundbreaking approach applies PMC to a novel domain: Sports Strategy Analytics. As an example, the reliability (winning percentage) of a sports player can be ascertained from the reliability (success rate) of their specific sub-skill sets (e.g., serve, forehand, backhand, etc., in tennis). In this presentation, we will discuss our recent research work, which involves the application of PMC, machine learning, and computer vision to the realm of sports strategy analytics. At the end of the presentation, we will also discuss the vision of a new international sports analytics conference series (https://formal-analysis.com/isace/2023/).

BIOGRAPHY

Dr. Jin-Song Dong is a professor at the National University of Singapore. His research spans a range of fields, including formal methods, safety and security systems, probabilistic reasoning, sports analytics, and trusted machine learning. He co-founded the commercialized PAT verification system, which has garnered thousands of registered users from over 150 countries and received the 20-Year ICFEM Most Influential System Award. Jin Song also co-founded the commercialized trusted machine learning system Silas (www.depintel.com). He has received numerous best paper awards, including the ACM SIGSOFT Distinguished Paper Award at ICSE 2020. He served on the editorial board of ACM Transactions on Software Engineering and Methodology, Formal Aspects of Computing, and Innovations in Systems and Software Engineering, A NASA Journal. He has successfully supervised 28 PhD students, many of whom have become tenured faculty members at leading universities worldwide. He is also a Fellow of the Institute of Engineers Australia. In his leisure time, Jin Song developed Markov Decision Process (MDP) models for tennis strategy analysis using PAT, assisting professional players with pre-match analysis (outperforming the world's best). He is a Junior Grand Slam coach and takes pleasure in coaching tennis to his three children, all of whom have reached the #1 national junior ranking in Singapore/Australia. Two of his children have earned NCAA Division 1 full scholarships, while his second son, Chen Dong, played #1 singles for Australia in the Junior Davis Cup and participated in both the Australian Open and US Open Junior Grand Slams.

All are welcome!

In case of questions, please contact Dr. Jacky Keung at jacky.keung@cityu.edu.hk, or visit the CS Departmental Seminar Web at https://www.cs.cityu.edu.hk/events/cs-seminars/recent-cs-colloquiums.