Speaker: Guiliang Liu, Oliver Schulte, Simon Fraser University, School of Computing Science

Title: What is the value of an action in ice hockey? Deep Learning for The National Hockey League

Abstract:

A common way to assess a player performance is by measuring how valuable his actions are. We measure the value of a player’s action by how much it increases his team’s chance of scoring the next goal. A deep neural net model estimates an action’s scoring impact based on the game context, including game time, rink location, game score, previous events.

Outline:

We show how to use deep learning to build a neural net model that estimates the probability that a player’s team will score the next goal (as opposed to the opposing teams). A neural model can represent the highly non-linear dependencies of scoring chances on game context, including game time, rink location, and previous events. The model quantifies the impact of all actions, including face-offs, penalties, shots, … We apply the action value estimator to rank players according to the total impact of their actions on scoring. Evaluation on actual players indicates that our scoring impact correlates with plausible alternative metrics such as a player's total points and salary. However, SI provides an improvement over those metrics as it captures more information about the game events. We illustrate the results by identifying players that highly impact their team’s scoring chances, yet drew a relatively low salary.