Speaker: Sam Power (University of Bristol)

Date: 06/05/2025 at 13:15 in 1 WN 3.11

Title: A state-space perspective on modelling and inference for online skill rating

Abstract:
In the quantitative analysis of competitive sports, a fundamental task is to estimate the skills of the different agents ('players') involved in a given competition based on the outcome of pairwise comparisons ('matches') between said players, often in an online setting. In this talk, I will discuss recent work in which we advocate for adoption of the state-space modelling paradigm in solving this problem. This perspective facilitates the decoupling of modelling from inference, enabling a more focused approach to development and critique of model assumptions, while also fostering the development of general-purpose inference tools.
I will first describe some illustrative model classes which arise in this framework, before turning to a careful discussion of inference and computation strategies for these models. A key challenge throughout is to develop methodology which scales gracefully to problems with a large number of players and a high frequency of matches. I then conclude by describing some real-data applications of our approach, demonstrating how this framework facilitates a practical workflow across different sports.
This is joint work with Samuel Duffield (Normal Computing) and Lorenzo Rimella (Università degli Studi di Torino).