



Working Group on Statistical Learning Seminar

Title: Beating the odds: a flexible Bayesian model for predicting football goals

Speaker: Nick Zhang (UCD)

Date: Thu 23rd October 2025 at 3:00PM

Location: E0.32 (beside Pi restaurant)

Abstract: Modelling football goals has gained significant scientific interest over recent decades, driven by the sport's cultural significance and the inherent randomness of match outcomes. Among various approaches, the Poisson model remains one of the most popular and celebrated parametric models due to its elegance, interpretability, and empirical performance. However, a key assumption of the Poisson distribution is equi-dispersion in the observations, which does not always hold true in football score data. In this work, we generalize the model using the Conway-Maxwell-Poisson (COM-Poisson) distribution, a flexible two-parameter extension of the Poisson distribution that can directly account for over- and under-dispersion. Our formulation preserves the generalized linear model structure, and inference is carried out under a Bayesian framework with latent team-specific attack, defence, and dispersion effects. Additionally, we include a model selection mechanism by introducing a spike-and-slab prior over the latent dispersion variables. The usefulness of the proposed methodology is studied in data from the English Premier League and other major European football leagues.