Modelling Uncertainty within Recommender Systems using Nonparametric Predictive Utility Intervals

Angela McCourt
Brett Houlding
Trinity College Dublin
Dublin (Ireland)

Abstract
The way in which we learn is the subject of considerable research within multiple disciplines. Learning preferences for decision-making processes has been an area of substantial research in recent years given the introduction of Recommender systems (RSs). RSs help in decision-making processes by recommending items of interest and filtering out undesired items, they need to learn preferences by extracting information about both the user and the item. Such systems often give a point-wise recommendations to its users. These recommendations are not always accurate and may lead to user dissatisfaction. In this paper, we propose incorporating uncertainty and vagueness into RSs via Nonparametric Predictive Intervals (NPUIs).

Keywords: Recommender Systems, Decision-making under vagueness and uncertainty, Nonparametric Predictive Utility Intervals, Cold-start.