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Thesis Abstract

Random Attention Span (Job Market Paper)

In this paper, I introduce a random attention span model (RAS), which uses stopping time to identify decision-makers' behavior under limited attention. By restricting the distribution of consideration sets with stopping time, the RAS identifies preferences without any need for menu variation. In addition, the RAS allows consideration sets to be correlated with preferences. I also use revealed preference theory that provides testable implications for observable choice probabilities. I test the model and estimate the preference distribution using an experimental dataset on choice behaviors that involve lotteries. The test fails to reject the null that the choice dataset is generated by the RAS. When restricted to the constant relative risk aversion (CRRA) preferences, the RAS estimation has a general alignment with the CRRA-LA model (Aguiar et al., 2023), which uses menu variation.

Shapley Value Explanation on Stochastic Choice (with Victor Aguiar and Nail Kashaev)

Many behavioral aspects simultaneously influence decision-makers' choices, yet most economic models that aim to study causality often focus on limited factors and struggle to predict choices accurately. In contrast, machine learning techniques leverage high-dimensional data to make precise predictions, but their "black-box" nature complicates the interpretation of how different factors contribute to decision-making. To address this, we develop a machine learning model to predict decision-makers' choices using an experimental dataset focused on lottery behaviors. We then apply Shapley Additive Explanations (SHAP) to analyze the model's predictions, uncovering key features that shape decision-making. Our findings indicate that the location of lotteries and cognitive cost are the two most significant factors influencing decision-makers' choices.

A Machine Learning Approach to Classify Heterogeneous Attention and Risk Preference

Decision-makers exhibit heterogeneity not only in their risk preferences but also in their attention allocation. This paper addresses the challenge of effectively describing and categorizing this diversity for economic analysis. By applying DBSCAN, a density-based machine learning algorithm, we classify decision-makers into distinct groups based on their behavior in the risk and attention domains. Unlike other clustering techniques, such as K-means, DBSCAN automatically determines the number of groups through its density-based approach, eliminating the need for researchers to manually specify an ideal number of clusters. This method allows for the identification of complex behavioral patterns and outliers, offering a more flexible and insightful classification that enhances the understanding of decision-making processes in these two critical domains.