Neural Attribute Normalization :
An Application to Marketing with Deep Learning

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Abstract

The importance of the choice set composition on individual preferences has been of wide interest in decision models. Most notably a large literature on context effects has been written over the last few decades. We propose a model for conjoint analysis seeking to elaborate on the role that choice set composition plays in a discrete choice problem through a normalization of the perceived value of each product’s attributes. Our model extends the comprehension of context effects beyond the classical three-option cases of decoy, compromise and similarity. Specifically, we generalize a state-of-the-art class of models stemming from recent research on neural normalization to a multi-attribute choice setting. We also investigate the construction of the reference point by comparing different models, from simple cases based on sample statistics to flexible neural networks. We highlight the performance of the model with an experimental application to credit card choices. We find decisive evidence for attribute-based normalizing behavior. Understanding this normalization phenomenon will allow firms to optimize their products portfolio with options whose main purpose is to increase the sales of their other products.

Keywords: Context Effects, Discrete Choice, Neural Networks, Consumer Neuroscience

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