Autoregressive Market Basket Transformer

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Abstract

We introduce the autoregressive market basket transformer, which we compare to several benchmark models that also take dynamic effects into account. We evaluate models by binary cross-entropies for a holdout sample. All benchmark models are outperformed by the transformer. Adding own effects of category-specific advertising leads to a further improvement. We measure relationships for product category pairs by generalized partial correlations. We obtain evidence for nonlinear dependences and several asymmetric correlations. We derive marginal effects of category-specific advertising. These effects are at least moderate in about one third of the product categories and, as a rule, differ between selected weeks. We also discuss managerial implications of generalized partial correlations and marginal effects.

Track: Methods, Modelling & Marketing Analytics