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Latent (Z-Dimensional) Vector Disentanglement for Quantification of Consumer Satisfaction
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Opportunity
- Autoencoders help us understand features of complex data
- Variational autoencoders (VAE) help us modify this data easily
- \( \beta \)-VAEs help break down (disentangle) this black-box data into human-understandable features by prioritizing features based on occurrences
- These features can be used to recommend items with similar features, generate new items, or directly modify elements of the item
- StockX is known as the “stock market of things,” meaning customers set their own asks/bids in order to create a commodities marketplace where the people decide what an item is worth, not a company
- By using this data, we can extrapolate a “willing-to-pay” price point, through which we can measure how much people want to pay for an item, and with the autoencoder data, we can figure out what features in an item create that price point

Approach (\( \beta \)-VAE)
What can we do with an understanding of these encoded vectors?

Impact
- By correlating these latent vectors to "willing-to-pay” price points and/or sales data, we can identify what specific features of an item make it desirable to customers without experimentation
- In highly experimental fields like fashion, this can be used to decompose trends in the industry and build better pricing models for goods

References and Acknowledgements:
- StockX for images and price data
- “Understanding disentangling in \( \beta \)-VAE” https://arxiv.org/abs/1804.03599