BRINGING BUSINESS, STATISTICAL METHODS AND TRANSFER LEARNING TOGETHER: Sales Elasticity of Emotional Displays - Large Scale Evidence for Selling with a Straight Face

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This study marks the first empirical approach which establishes the sales elasticity of emotional displays in sales pitches. We apply state-of-the art artificial intelligence technology to almost two years of video footage (17,312 hours or 62.32 million frames), in which a TV host makes her/his sales pitch to customers, to detect human faces by using a Haar-feature based cascade classifier. Salesperson's facial emotions are then extracted and classified into six emotional displays: happiness, sadness, surprise, anger, fear, and disgust, using mini-Xception model (a pre-trained convolutional neural network). We, then, matched them to customers' purchase data to understand the true nature of the relationship. To estimate sales elasticity, we incorporate emotional displays in sales response models together with marketing mix activities (i.e., product, price, display duration, and free shipping). We found that the sales elasticities of a host's emotional displays are uniformly negative, including that of happiness, which is a provocative finding (against "service with a smile" policy) because it partially contradicts the external validity of social contagion theory. In other words, emotional displays in sales pitches are hazardous to business, salespersons should pitch with neutral expressions (i.e., absence of emotion). Additionally, we found that the presence (versus absence) of a host's face in the frame positively increases sales by 0.62%. Therefore, the study offers guidance to firms on re-training low performers on "selling with a straight face" as well as to reward successful hosts.

Keywords: Convolutional neural networks, direct-response TV shopping, emotions, facial expression tracking, video image analytics

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About the Speaker

Mustafa Murat ARAT is PhD-level educated, bilingual statistician/ data scientist, who designs, develops, and implements advanced predictive methods, powered by machine learning and deep learning algorithms, to provide actionable insights from large volumes of real-world, structured, and unstructured data in order to satisfy the business needs for decision making. He earned his B.Sc. and M.Sc. degrees in Statistics from Hacettepe University, Ankara and recently received his Ph.D. in Analytics from University of Tennessee, Knoxville, T.N., U.S.A. His research interests include but are not limited to the following areas: machine learning and deep learning algorithms, supervised/ unsupervised/ reinforcement learning methods, time series forecasting and modeling, and computational statistics.

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