

MARKETING COLLOQUIA

2014 – 2015

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Thursday, September 4, 2014

Where: 741 JMHH

When: 3:00 PM to 4:20 PM

WHICH CURVE ARE YOU ON? A LATENT RELATIONSHIP TRAJECTORY MODEL OF CUSTOMER BEHAVIOR

ABSTRACT: We introduce a new methodology - a latent relationship trajectory model (LRTM) - that can capture and forecast dynamics in multi-dimensional customer behaviors using a flexible parametric family of curves that drive these behaviors as a common dynamic factor. The LRTM provides a new twist on the popular Hidden Markov Model (HMM) approach by allowing for a significantly more flexible set of latent trajectories and improved computational efficiency, while maintaining the parsimony of the HMM approach. We compare the empirical performance of the LRTM and HMM in the context of jointly modeling customer retention and usage based on micro-level panel data from a financial services firm. We find that (1) the LRTM and HMM both predict aggregate churn accurately, (2) the LRTM out-performs the HMM in predicting individual-level usage, and (3) the LRTM out-performs the HMM in predicting which customers are most likely to churn. Our work offers boundary conditions for the use of HMMs in forecasting within-customer dynamics and suggests that the LRTM framework can be a more general alternative in a broad range of data settings.