# Luoyexin SHI (Annie)

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## EDUCATION

**Washington University in St. Louis,** St. Louis, MO USA — Present
*Ph.D. in Business Administration (Quantitative Marketing)*
**University of California,** Davis, CA USA — June 2018
*M.S. in Statistics*
**University of California,** Davis, CA USA — June 2017
*M.A. in Economics*
**University of Washington,** Seattle WA USA — June 2015
*B.A. in Economics (with University cum laude honor and departmental honor)*

## KEY COURSEWORK

- Machine learning coursework:
  - Supervised Learning: decision trees, naive bayes, support vector machines, bagging and boosting
  - Deep Learning: neural networks, pytorch
  - Unsupervised Learning: clustering, hierarchical and density based clustering, gaussian mixture models and cluster validation, dimensionality reduction and PCA, random projection and ICA
- Econometrics coursework:
  - Ph.D. econometrics for first year, Ph.D. level bayesian econometrics, Ph.D. level structural econometrics, Ph.D. level advanced micro-econometrics
- Economics/Marketing coursework:
  - Ph.D. microeconomics for first year, Ph.D. macroeconomics for first year, Ph.D. level analytical modeling in marketing, Ph.D. level empirical methods in marketing, Ph.D. level structural modeling in marketing, Ph.D. level industrial organization

## RESEARCH EXPERIENCE

**Research Project I**
"Using Algorithm Scores to Measure the Impact of Targeted Promotional Message"(*Working Paper*)
*(with Professor T. Chan and Professor Dennis Zhang)*
Washington University in St. Louis, St. Louis, MO
• Using algorithm scores provided by Alibaba to recover the causal effect of targeted promotional message

**Research Project II**
*(with Professor S.Seetharaman and D.Sundaramoorthi) (Work in progress)*
Washington University in St. Louis, St. Louis, MO
• Machine Learning algorithm combined with empirical marketing model for better prediction using retailer scanner data

**Research Project III**
*(with Professor S.Seetharaman and D.Sundaramoorthi) (Work in progress)*
Washington University in St. Louis, St. Louis, MO
• Comparison of mis-specified homogenous and customer segmented model using consumer panel data

# Summary of Interest in AI

My interest in AI had sparked when I was an undergraduate student in economics. It is when "big data" has gained much attention and drastically changed people's life. One of my current research projects uses E-commerce company data on the targeted message to investigate the benefit and cost to the consumers when a firm uses machine learning algorithms to target consumers better. Although our contribution mostly lies in the methodology contribution (we showed that traditional econometrics tools for causal inference combined with machine learning algorithms could recover true causal effect), we found that the benefit of better targeting comes with a cost. The cost may induce customers to stop receiving the message, which causes the firm to lose the advertising channel. Another one of my current research projects also focuses on combining the strength of the empirical marketing model and machine learning algorithms. In this project, we improved the performance of the empirical marketing model for profit prediction by using a machine learning algorithm. We illustrate this point using a scanner dataset. Moreover, the third current research project uses consumer panel data to show the effect of the misspecified error function in the estimation, and how much profit deterioration it causes. We also showed that the deterioration is more severe if customer segmentation is implemented, which is counterintuitive to current marketing literature results.

My future research project will focus on how does the development in AI transforms the health care industry. Hence, I believe NBER Young Scholars Workshop on the Economics of Artificial Intelligence will not only enlighten me with different perspectives on AI's contribution and cost but also provide me with an excellent opportunity to meet my fellows who are also interested in this topic.