CONG (MARK) MU

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EDUCATION

Johns Hopkins University (Baltimore, MD)   08/2017 –
Doctor of Philosophy | Major: Applied Mathematics and Statistics
Master of Science in Engineering | Major: Applied Mathematics and Statistics
Master of Science in Engineering | Major: Computer Science

Sun Yat-Sen University (Guangzhou, China)   08/2013 – 06/2017
Bachelor of Science | Major: Statistics | Minor: Finance

RESEARCH EXPERIENCE

Statistical Models for Large Networks | Johns Hopkins University
- Built network models that could be scaled to analyze large networks; estimated and simulated network formation models using high performance computing; developed R package with research objectives such as identifying the community structure
- Key words: **Hierarchical Exponential-Family Random Graph Models, (Generalized) Random Dot Product Graph, SBM with Covariates, Variational generalized EM algorithms, Minorize-Maximization, Parallel Computation**
- Dynamic Network Structure [Shiny App]
- (G)RDPG with Covariates [R Package](Private now)

Automatic Tools for Dash Cam Video | Johns Hopkins University
- Developed automatic tools for analyzing and annotating video stream with relevant information such as timing, speed, traffic, accidents, objects and etc
- Key words: **Structural Similarity Index, Oriented FAST and Rotated BRIEF, Image Hashing, Robust Image Similarity Measure, Deep Neural Networks**
- Mu, C., & Budavári, T. (2018). Dash Cam Video Analysis: Laptimes and Beyond. Poster presented at 2018 IDIES Annual Symposium, Baltimore, MD. [Poster]

Constructing Affinity Matrix for Spectral Clustering | Johns Hopkins University
- Built a framework on constructing affinity matrix for spectral clustering; developed corresponding theoretical justification on different setting
- Key words: **Low-Rank Subspace Clustering, Sparse Subspace Clustering, Spectral Curvature Clustering, Profile Likelihood, Random Dot Product Graph**
- On Constructing Affinity Matrix [Draft]

Therapy Functional Measures | Johns Hopkins University & Johns Hopkins Hospital
- Identified patterns in patient functional trajectories; measured causal effect of different physical therapy dosage regimes on patient functional status; constructed features and built model to predict AMPAC score to optimize physical therapy in the hospital
- Key words: **Linear Mixed-Effect Model, ARIMA, Causal Inference**
- Crockett M., Mu, C., & Dahbura, A. T. (2018). Predictive Analytics for Patient Mobility Using AM-PAC. Poster presented at 2018 Johns Hopkins Research Symposium on Engineering in Healthcare, Baltimore, MD. [Poster]

Text Mining and Information Extraction | Johns Hopkins University
- Collaborated with different teams to mine the large-scale text data, speculated gender based on names; extracted information from large-scale data sets; crawled online data
- Key words: **Natural Language Processing, Regular Expression, Crawler**

PROFESSIONAL EXPERIENCE

Analyst Intern | GF Fund Management (Guangzhou, China)   11/2016 – 04/2017
- Selected features to build market emotional indicators and developed model to predict market, achieved 92% accuracy (**XGBoost, Random Forest, Logistic Regression, Lasso**)
- Mined key business data and constructed data reporting system; analyzed and visualized product and user data to provide decision support (**R Markdown, R Shiny**)

Data Science Intern | Research Center of Statistical Science (Guangzhou, China)   02/2016 – 10/2016
- Classified users to optimize delivery of advertisements and constructed program recommendation system; predicted whether user will be secondary loans to explore potential customers and evaluate risk in advance (**Collaborative Filtering, Clustering**)
- Presented in 9th China-R Conference and Regional Data Science Conference on how to use R to interact and share ideas by using Shiny in R to make an interactive interface rapidly (**R Shiny**)

TEACHING EXPERIENCE

Teaching Assistant | Johns Hopkins University
- Data Mining (Spring 2018, Spring 2019, Fall 2019)
- Applied Statistics and Data Analysis (Fall 2019)
- Applied Statistics and Data Analysis II (Spring 2020)

SKILLS

R (statnet, mclust, dplyr, ggplot2, shiny, Rmpi), Python (NumPy, Pandas, scikit-learn)
Matlab, C/C++, SQL, TensorFlow, OpenCV, Data Visualization, Machine Learning