

Youngmin Ju

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EDUCATION

Ph.D. in Economics | *University of Southern California* Aug. 2021
Honors: Korean Studies Institute (KSI) Graduate Student Affiliate (Graduate research grant) | Graduate School Summer Research & Writing Grant | Dornsife Graduate School Fellowship | USC Dornsife Dean's List

Master of Arts in Economics | *Korea University* Feb. 2010
Honors: Brain Korea 21 scholarship (Merit-Based)

Bachelor of Science in Mathematical Sciences | *Korea Advanced Institute of Science and Technology* Feb. 2008
Honors: Mathematical Science Department scholarship (Merit-Based) | National Science and Technology scholarship (Merit-Based)

PROFESSIONAL EXPERIENCE

Data Scientist / Economist | *Data Science Projects* Jan. 2011 – Present

Affirmative Action in Korea - Regression Discontinuity with Multiple Assignment Variables

- Developed an identification of a fuzzy regression discontinuity design (RDD) with multiple assignment variables to analyze the effect of the Affirmative Action Policy in Korea on female employment rate in the private sector
- Discovered that while the overall policy has no effect, but a partial effect (company size) increases female employment rate by 5% points

Store Item Demand Forecasting Project

- Implemented a Recurrent Neural Net (RNN) with Long Short-Term Memory (LSTM) to predict 3 months of item sales at different stores to build baseline sales predictions to help with cash flow management, business planning and strategy
- Reduced error rate attained by LSTM to 86% of ARIMA's error rate

Customer Churn Prediction Project

- Identified the customers most likely to churn and the features with the greatest impact on churn by building a multi-classification model with XGBoost and comparing with other algorithms
- Confirmed that XGBoost outperformed the rest of the tested algorithms with an Area Under Curve (AUC) value of 93.3% (GBM 90.89%, Random Forest 87.76%, Decision Trees 83%)

Online Retail Project

- Segmented and cleaned business performance metrics such as monthly revenue, activation rate, monthly retention rate, and churn rate and conducted Lifetime Value (LTV) methods, increasing accuracy of a multi-classification model from 76.5% to 84%

USC Graduate Level Teaching Assistant | *University of Southern California* Aug. 2016 – May 2021

Courses Taught: Big Data Econometrics, Applied Econometrics, Introduction to Econometrics, Introduction to Statistics

- Tutored about 70 graduate-level university students per semester across concepts such as Python programming for Causal Inference and Machine Learning, driving an average of 93% of students to a B+ grade or higher

Junior Military Officer – Republic of Korea Army (Economics Instructor) | *Korea Army Academy at Yeongcheon* June 2010 – May 2013

- Devised robust, Panel Data economic models to evaluate optimal national defense R&D expenditures, landing 2 government research projects worth \$40,000+ each
- Supervised cadets and provided a clear vision and positive working environment daily, helping drive the Economics department to the #1 department ranking for 2 consecutive years

Economics Researcher, (PW Level III) | *Hyundai MOBIS* Oct. 2009 – Mar. 2010

- Designed causal inference models to investigate the economic effects of alleged anti-competitive behaviors of Hyundai Mobis on retail agencies, repair shops, mediating companies, and consumers
 - Conducted research and crafted economic evidence to reduce the fine from \$150 million to \$30 million
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PUBLICATIONS

Control Function Approach for Partly Ordered Endogenous Treatments: Military Rank Premium in Wage June 2017

Oxford Bulletin of Economics and Statistics

- Developed a method to find the effects of partly ordered treatments while correcting for possible treatment endogeneity with nearly parametric control functions
 - Estimated effects of military ranks (ordered treatments) on wage relative to non-veteran status (control treatment) and discovered that the military rank effects differ much: officer has large positive effects (17.9%) but enlisted ranks have near-zero effects
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TECHNICAL SKILLS

Data Engineering: Database Management, Exploratory Data Analysis, Feature Engineering, Metrics, KPI, MySQL

Statistics and Econometrics: Predictive Analytics, Experimental Design, A/B Testing, Simulation, Sampling, Optimization

Causal Inference: Matching, Instrumental Variable, Regression Discontinuity Design, Differences in Differences, Synthetic Control

Machine Learning: Decision Trees, Random Forests, Bagging, Boosting, SVM, Naive-Bayes, SVD, PCA, Clustering, k-NN, Deep Learning

Programming: Python (pandas, numpy, matplotlib, seaborn, plotly, xgboost, sklearn, TensorFlow, Keras), R, SQL, Tableau, Git, STATA

CERTIFICATES

Machine Learning (Coursera) | **Data Scientist with R Track (DataCamp)** | **Online MBA (Hunet)** (HU-2012-411421)

LEADERSHIP

Enthusiastic Hiker & Traveler

- Co-organized an 8-day climb up Annapurna in the Himalayas during a 46-day backpacking trip