JAESEOK HWANG

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Ph.D. Candidate in Quantitative Economics with 5+ years of experience building ETL pipelines. Expertise in Machine Learning to solve optimization problems using geospatial and time-series data.

PROFESSIONAL EXPERIENCE (Research Assistant)

Data Intensive Farm Management (USDA NRCS) Sep 2020 – Aug 2025

- **Engineered** Python/R data pipelines to process and integrate 500k+ geospatial and time-series records, enabling large-scale modeling and public data delivery.
- **Collaborated with** Oracle cloud engineers to support scalable ETL workflows, developing core R/Python scripts for processing of 300+ unique datasets.
- **Developed and benchmarked** tree-based models (XGBoost, Causal Forest) to forecast performance outcomes and improve accuracy over baseline methods.

Center for the Economics of Sustainability (UIUC) Jan 2021 – Aug 2024

- **Conducted** large-scale economic and geospatial scenario analyses using Monte Carlo simulations to evaluate the profitability and sustainability of different business strategies.
- **Applied** panel-based counterfactual models to estimate the economic impact of management changes, informing national-scale policy studies.

DATA SCIENCE AND ECONOMICS PROJECTS

Reproducible Code Portfolio: github.com/jaeseokh

Predictive Model Generalization and Validation

- Built and validated ML models (XGBoost, Causal Forest, PyTorch MLP) to develop a framework for assessing out-of-sample performance across 100+ distinct environments.

Causal Inference for Optimal Resource Allocation

- Applied Generalized Additive Models (GAMs) to estimate the causal effect of input levels on productivity, uncovering systematic inefficiencies in resource allocation.

Full Distributional Modeling for Risk Analysis

- Designed a novel framework using Quantile Forests and Maximum Entropy methods to model full outcome distributions, enabling a more complete assessment of risk.

Geospatial Economic Analysis for Site-Specific Investment

- Led spatial and economic analysis to develop a targeted resource allocation strategy for a national-scale initiative in partnership with South Africa's BFAP.

EDUCATION

University of Illinois at Urbana-Champaign Expected Dec. 2025
Ph.D. Agricultural and Applied Economics

University of Illinois Urbana-Champaign May 2020
M.A. Agricultural and Applied Economics

Sogang University Aug. 2013, South Korea
B.S. Economics

TECHNICAL SKILLS

Languages: R (Expert), Python (Proficient), SQL **Tools:** GitHub, Jupyter, QGIS, Quarto

Data Science & ML: Scikit-learn, PyTorch, Pandas.

Methods: Causal Inference, Bayesian Models, Time-Series Analysis, Geospatial Analysis