

# Akshay Pandit

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Urbana, IL

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## EDUCATION

### University of Illinois at Urbana-Champaign

Candidate for PhD in Civil Engineering (Computational Science and Engineering)

GPA: 3.7 / 4.0

Urbana, IL

Aug. 2020 – May 2025 (Expected)

### University of Illinois at Urbana-Champaign

Master of Science in Applied Statistics

GPA: 3.7 / 4.0

Urbana, IL

Sept 2022 – Dec 2023

## TECHNICAL SKILLS & RELEVANT COURSES

**Languages:** Proficient: Python, R, Basic: C, C++, Bash **OS:** Linux

**Mathematics:** Stochastic Processes, Intro to Optimization, Applied Regression Design, Numerical Analysis, Sampling and Categorical Data

**Algorithmic Trading:** Algorithmic Market Microstructure, High Frequency Trading

**ML and Data Science:** Machine Learning, Statistical Learning, Pattern Recognition, Intro to Data Mining

## PROFESSIONAL EXPERIENCE

### Corteva Agriscience

Deep Learning Intern, Bioinformatics Team

Urbana, IL

May 2022 – Aug 2022

- Implemented BERT-based NLP model (BERTax) for genome classification to compare with existing sequence-based tools
- Processed 10,000+ genome assemblies across different taxonomic levels to test BERTax over different fragment classes
- Performed benchmarking against top sequencing model (Kraken2) achieving 95% consistency in prediction compared to 93% for Kraken2 suggesting BERTax can replace sequence-based tools

### Caterpillar Inc.

Data Scientist Intern, CatDigital

Remote

May 2021 – Aug 2021

- Built a Random Forest supervised ML model for an ensemble of 10 models that predicts change in asset ownership
- Analyzed 100K+ examples with 100+ features and applied under-sampling techniques reducing class skewness by 1000%
- Integrated the model into an ensemble framework, boosting accuracy from 75% to 82% and precision from 79% to 88%, enhancing user recommendations

## TRADING PROJECTS

### Automated trading bot on Solana blockchain

Guide: [Prof. David Lariviere](#)

Urbana, IL

Jan 2024 – May 2024

- Created a trading bot for meme coins on Solana to track new token pairs and trade based on price and volume trends
- Developed scripts to track new pairs, find buy signals, interact with Solana AMM for swaps, and build trading logic for sell signals
- Backtested strategy for 100+ meme coins with net profit, but live trading faced net losses due to public node latency

### Backtesting HFT market-making strategies

Guide: [Prof. David Lariviere](#)

Urbana, IL

Aug 2023 – Dec 2023

- Worked in a team of 4 to backtest high-frequency trading (HFT) market-making strategies, utilizing market microstructure data for cash equities and cryptocurrencies
- Wrote downloader and parser scripts to obtain data from 3+ crypto-exchanges and parse it for Strategy Studio back tester
- Backtested Ichimoku, Moving Average, and Volume-weighted moving average strategies over 1 month period producing net losses ([Gitlab repo](#))

## RESEARCH EXPERIENCE

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University of Illinois, Urbana-Champaign  
Graduate Research Assistant, Konar Research Group

Urbana, IL  
Jan 2019 – Present

**Dissertation: Impact of Trade on Agricultural Productivity**

Guide: *Dr. Megan Konar*

**Chapter 1: Examine the correlation between trade and agricultural productivity** (*Under Review*)

- Applied weighting and decomposition analyses allowing for a nuanced understanding of how trade impacts productivity
- Analyzed and cleaned 60+ years of data from the FAO for 245 countries across 100+ food commodities
- Showed that trade increases global agricultural yields over time, with high-yielding countries having higher export shares than production shares

**Chapter 2: Determine the causal impact of global trade on agricultural variables** (*Under Review*)

- Researched and applied econometric methods to investigate the causal relationship between trade, agricultural variables, and groundwater depletion
- Built models using 2SLS Instrumental Variables (IV), PPML IV, and Iterative 2SLS IV approaches to address reverse causality and endogeneity concerns
- Concluded that increased trade causally boosts global agricultural yields and reduces groundwater depletion, supporting the productivity of globalization over self-sufficiency

**Chapter 3: Estimate the spatially resolved bilateral trade links in the US-China agri-food system** (*Published*)

- Investigated spatial connections in US-China agri-food trade, estimating trade between Chinese provinces and U.S. states/counties.
- Processed 3 national datasets for 2017 and created multiple crosswalks for interoperability.
- Developed a downscaling scheme to integrate datasets and estimated 15,469 and 713,806 link-level connections at state-province and county-province resolutions.
- Found that top 5 link-level connections and transit hubs account for over 70% bilateral agricultural trade, making the network vulnerable to supply chain shocks and resource depletion.

**Chapter 4: Ascertain the causal impact of China joining the WTO on US agriculture** (*Under Progress*)

## PUBLICATIONS AND PRESENTATIONS

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- **[Publication]** Spatially detailed agricultural and food trade between China and the United States, **A. Pandit**, D. B. Karakoc, M. Konar. *Environmental Research Letters*, 2023. [Link](#)
- **[Publication]** Hydro-social metabolism: scaling of birth rate with regional water use, S. Pande, **A. Pandit**. *Palgrave Communications (Nature)*, 2018. [Link](#)
- **[Presentation]** High-resolution Mapping of US-China Bilateral Agricultural and Food Supply Chains, **A. Pandit**, D. B. Karakoc, M. Konar, *American Geophysical Union Conference*, 2022
- **[Presentation]** How does trade impact agricultural productivity?, **A. Pandit** *American Geophysical Union Conference*, 2021