

# Preetam Kulkarni

Greensboro, NC | (515) 735 8872 | [pkulkarni@alumni.iastate.edu](mailto:pkulkarni@alumni.iastate.edu) | [LinkedIn](#) | [GitHub](#) | [Google Scholar](#) | [Portfolio](#)

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## Objective

Experienced researcher with a strong foundation in operations research, statistics, and machine learning. Seeking a challenging role as a Data Scientist or Applied Scientist to leverage research experience in simulation, predictive modeling, optimization, and advanced analytics to enable data-driven decision-making and innovative solutions in a dynamic organization.

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## Education

**University of Texas at Arlington**, Arlington, TX

Aug 2021 – May 2025

Doctor of Philosophy in Industrial Engineering, *GPA – 4*

Honors: *Lawrence W. Stephens Fellowship*

**Iowa State University**, Ames, IA

Aug 2016 – Aug 2018

Master of Science in Industrial Engineering, *GPA – 3.91*

**Bangalore University**, Bengaluru, India

Sep 2009 – Jul 2013

Bachelor of Engineering in Mechanical Engineering, 82.1%

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## Relevant Coursework

- Probability & Statistics, Applied Regression Analysis, Design of Experiments, Data Mining & Analytics, Stochastic Processes
  - Operations Research, Computational Optimization, Response Surface Methodology & Computer Experiments
  - Linear & Nonlinear Programming, Simulation and Optimization, Systems Engineering, Advanced Engineering Economy
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## Skills

- **Data Analysis:** Python, Pandas, NumPy, Matplotlib, Seaborn, SAS, MATLAB, SQL, PySpark, Tableau, Excel, Power BI
  - **Statistical Analysis:** Regression Analysis, Design of Experiments, Hypothesis Testing, Response Surface Methodology
  - **Machine Learning:** scikit-learn, TensorFlow, PyTorch, CatBoost, XGBoost, Transformers, Deep Learning, CNN, RNN
  - **Simulation:** Agent-Based Modeling (ABM), Discrete-Event Simulation, NetLogo, MESA, WITNESS, AnyLogic and Simio
  - **Risk Management:** Failure Modes and Effects Analysis (FMEA), Root Cause Analysis (RCA), 3 Legged 5 Why (3L5Y) and 8D
  - **Others:** HTML, CSS, Google AppSheet, GitHub, AWS
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## Projects

- Fine-tuned **BERT for sequence classification** to predict disaster tweets, with data preprocessing and model optimization - [GitHub](#)
  - Developed **sales forecasting** models using **multivariate linear regression**, **deep neural networks**, and **XGBoost**, incorporating trend, seasonality, and promotional features across 54 stores and 33 product families - [GitHub](#)
  - Conducted data preprocessing, model training & selection to **predict the trip purpose of airline passengers** using **CatBoost**, **Logistic Regression** and **Stochastic Gradient Descent** based on a data set with 364,811 instances and 58 features
  - Used **multiple linear regression** to predict heart-rate of a user based on gym equipment settings and user characteristics - [GitHub](#)
  - Developed a state transition matrix from historical data and **simulated future stock price variation** in Python - [GitHub](#)
  - Developed and analyzed a **discrete-event simulation** of a silicon wafer production facility to generate a monthly investment plan to efficiently increase the facility's production capacity over a year - [GitHub](#)
  - Conducted a **Design of Experiments (DOE)** study to evaluate the effects of infill percentage (density) and print speed on the tensile strength of 3D-printed poly lactic acid (PLA) components - [GitHub](#)
  - Applied **Response Surface Methodology (RSM)** to identify the optimum temperature of water, stirring rate and amount of water that would minimize the time taken to dissolve a fixed amount of salt - [GitHub](#)
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## Work Experience

**Graduate Research Assistant**, University of Texas at Arlington – Arlington, TX

Sep 2021 – May 2025

- Implemented sequential sampling to generate a Random Forest and XGBoost metamodel of an ABM of a crowd logistics network
- Developed a participatory ABM using Python's Tornado and MESA packages, incorporating real-time user interaction capabilities
- Deployed a participatory ABM on AWS EC2 using cloud9, enabling participants to access the simulation interface remotely
- Performed sentiment analysis using NLP with a transformer model on student feedback from a simulation experiment - [GitHub](#)
- Mentored and collaborated with graduate students in developing participatory ABMs on GitHub

- Created a prototype of a crowd logistics mobile app using Google AppSheet to help farmers transport their produce
  - Developed an ABM of a centralized and decentralized crowd logistics network using Python and NetLogo - [GitHub](#)
- Quality Engineer**, John Deere - Hagie – Clarion, IA *May 2018 – Jul 2021*
- Developed interactive dashboard in Excel for visualizing and analyzing machine failures at assembly stations
  - Performed critical supplier risk assessment based on failures per machine, quality and delivery ppm and conducted supplier audits
  - Facilitated Failure Modes and Effects Analysis (FMEA) and conducted root cause analysis using 3L5Y to address quality issues
- Quality Engineer Co-op**, Whirlpool – Amana, IA *Jun 2017 – Jan 2018*
- Created process maps and analyzed quality defects to develop quality control plans
  - Designed experiments to study and modify processes which reduced annual service incident rate by ~0.3%
  - Won “Whirlpool Bravo” award for development and implementation of Door Value Stream Quality System
- Graduate Research Assistant**, Iowa State University – Ames, IA *Jan 2017 – May 2017*
- Developed stochastic & deterministic optimization models for production and inventory control in MATLAB
- Process Engineer**, Tata Technologies Limited – Pune, India / Solihull, United Kingdom *Mar 2014 – Jul 2016*
- Analyzed and improved data consistency by 40% in GSPAS – assembly process management tool that uses standard language
  - Reviewed and eliminated Non-Value-Added (NVA) operations in GSPAS resulting in a 30% reduction in cycle time allocation
  - Delivered knowledge transfer sessions on DELMIA V5 and GSPAS to a group of 10 employees in four sessions
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## Certifications

- **DeepLearning.AI** - Generative AI with Large Language Models (LLM), Deep Learning, Machine Learning in Production
  - **Udemy** - Big Data with Apache Spark and Python, Microsoft Power BI, Tableau, SQL Bootcamp
  - **Kaggle** - Time Series (Forecasting)
  - **DataCamp** - Supervised Learning with scikit-learn
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## Publications

- Krejci, C., Kulkarni, P., Paliwal, A., & Boardman, B. (2024). Using Participatory Agent-Based Modeling to Teach Systems Thinking for Inventory Control. In *IISE Annual Conference. Proceedings* (pp. 1-6). Institute of Industrial and Systems Engineers (IISE).
- Kulkarni, P., & Krejci, C. C. (2023, December). Matchmaking In Crowd-Shipping Platforms: The Effects Of Mediator Control. In *2023 Winter Simulation Conference (WSC)* (pp. 303-314). IEEE.
- Kulkarni, P., Patel, P., & Krejci, C. (2023). Designing a collaborative online transportation platform for sustainable regional food distribution. In *IIE Annual Conference. Proceedings* (pp. 1-6). Institute of Industrial and Systems Engineers (IISE).
- Kulkarni, P., & Krejci, C. (2022, October). Evaluating a Crowd Logistics Network Using Agent-Based Modeling. In *Conference of the Computational Social Science Society of the Americas* (pp. 21-34). Cham: Springer International Publishing.
- Kulkarni, P., Azizi, V., Wang, L., & Hu, G. (2021). Analysis of decision making and information sharing strategies in a two-echelon supply chain. *International Journal of Supply Chain and Inventory Management*, 4(1), 81-106.
- Mehr, M. N., Kulkarni, P., Wang, L., & Hu, G. (2017). Production Planning of a Three-echelon Supply Chain with Information Sharing. In *IIE Annual Conference. Proceedings* (pp. 1823-1828). Institute of Industrial and Systems Engineers (IISE).
- Kulkarni, P. (2015). Evaluation of mechanical properties of AL 2024 based hybrid metal composites. *IOSR Journal of Mechanical and Civil Engineering (IOSR JMCE)*, 2278-1684.