

ALEX CARROLL

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SUMMARY

My research focuses on the design and application of agentic AI systems for procurement, pricing, and decision optimization within global supply chains. Building on a Master of Applied Science in Supply Chain Management from MIT and extensive professional experience at Amazon, Flock Freight, and Arrive Logistics, I integrate machine learning, optimization, and operations research to improve efficiency, adaptability, and intelligence in logistics and procurement networks.

My prior work combined forecasting and mixed-integer linear programming to optimize supply chain operations, yielding measurable cost reductions and resilience gains. Currently, my research explores how autonomous, goal-driven AI agents can augment procurement and pricing decisions, enabling dynamic negotiation, cost forecasting, and network design in complex industrial environments. I also examine how digital transformation technologies—including agentic AI, IoT, and blockchain—reshape technology strategy and innovation across global operations. My overarching goal is to harness AI's agentic capabilities to make supply chains more adaptive, data-driven, and strategically intelligent.

PROFESSIONAL EXPERIENCE

AMAZON- Tokyo, Japan

Jun 2024 – Aug 2025

Senior Operations Manager - Operations (AMZL)

- Drove an 11% QTR increase in TPH, processed 110,000+ PPD as site leader of 300+ Associates, and achieved #1 ranked site metrics (Q3) for JP Super Region 3.
- Directed implementation of an AI-driven sortation process, reducing mis-sorts by 9% and saving a projected 11,500 labor hours annually across multiple cycle shifts.
- Streamlined inbound, sortation, and pick workflows, improving average WIP compliance by 10% and contributing to a 5% improvement in PDD rates for outbound deliveries.
- Launched various comprehensive safety and productivity initiatives, culminating in a 15% reduction in incident rates and boosting employee engagement scores by 22% Q2 to Q4 2024.

FLOCK FREIGHT- San Diego, CA

Jan 2022 - Aug 2023

Senior Analyst - Operations & Analytics

- Managed dynamic pricing model, providing real-time quoting for +60% of revenue. Optimized cost and margin estimates for probability-based pooling calculations, responsible for cost accuracy, conversion optimization, and margin maximization.
- Improved costing model accuracy 10% (MAPE) through tenure, representing a 6 MM YoY improvement in cost savings and a 4.2 MM increase in gross profit.
- Automated pricing processes, resulting in a 40% increase in productivity and allowing strategic focus on higher-level pricing strategies.
- Collaborated cross-functionally with teams in engineering, data science, and product management to implement the APE ML pricing engine, resulting in streamlined automation of pricing processes and a 40% decrease in labor hours.
- Constructed and executed batch rating quoting automation tools for enterprise customers, removing workload equivalent of 4 QA associates.
- Directed daily pricing audits with Customer Success and Sales teams, assessing historic conversion, GP, and cost savings data to determine unique customer specific uplift/discount strategies.

ZILLOW- Seattle, WA

Jun 2021 - Dec 2021

Pricing Analyst - Acquisitions

- Led valuation of \$200MM+ in residential real estate utilizing data from internal and external datasets. Analyzed Zillow pricing valuations and risks, leveraging detailed financial models for strategic decision-making.
- Controlled Austin/San Antonio market research to enhance departmental accuracy. Utilized tools such as Tableau, Excel, SQL, Python, and proprietary ML tools.
- Monitored market data, analyzing real-time pricing information for weekly market intelligence reports; enhanced team accuracy (MAPE) 2.7% through tenure via outlier analysis within sales funnel.
- Executed 5 adopted proposals within Sales, Data Science, and Market (Austin) specialization groups to revamp efficiency metrics, resulting in a 18% reduction in case time per analyst.

ARRIVE LOGISTICS- Austin, TX

Feb 2017 - Jun 2021

Pricing Analyst - Strategy

- Developed and performed company pricing strategy through championing strategic and tactical price optimization; promoted best-in-class pricing strategy, helping increase contract revenue by 320% from Jan 2018 to Jan 2021.
 - Led multiple deals simultaneously ranging between \$1M to \$30M, closing \$150M+ in revenue through tenure.
- Feb 2017 - Oct 2017

- Maintained in-depth knowledge of industry trends, competitor analysis, and market dynamics, providing strategic insights to enterprise clients as well as internal stakeholders.

EDUCATION

MASSACHUSETTS INSTITUTE OF TECHNOLOGY, CAMBRIDGE, MA 2025 - Present

PhD in Transportation, specializing in Artificial Intelligence for Supply Chain Systems

MASSACHUSETTS INSTITUTE OF TECHNOLOGY, CAMBRIDGE, MA 2023 - 2024

Master of Applied Science in Supply Chain Management

- Publication: Peer Reviewed Scientific Conference Proceedings, "Drop Trailer Forecasting in Volatile Networks", 15th International Conference on Ambient Systems, Networks and Technologies (ANT), Procedia Computer Science, Elsevier Journal, April 2024
- Publication: MIT SCM Capstone Research, "Drop Trailer Management in Volatile Networks", utilizing Gradient Boosted Decision Tree (XGBoost) Demand Forecasting, Mixed Integer Linear Programming (MILP) with Gurobi, MIT DSpace, May 2024
- Publication: Professional Trade Publication, "Reinventing Drop Trailer Logistics with AI ", Supply Chain Management Review Magazine (Publication Forthcoming)
- Publication: Full Length Journal Submission Under Preparation, "Forecasting and Optimization in Drop Trailer Programs for Circular Supply Chains", Transportation Research Part C

UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN, CHAMPAIGN, IL 2021 - 2023

Master of Business Administration

THE UNIVERSITY OF TEXAS AT AUSTIN, AUSTIN, TX 2011 - 2016

Bachelor of Arts in Philosophy

SKILLS AND TOOLS

- Technical Skills: Agentic AI Systems, Decision Intelligence, Reinforcement Learning, Dynamic Programming, Optimization, Statistical Modeling, Forecasting, Supply Chain and Logistics Systems, Procurement and Pricing Analytics, Inventory Management, Revenue and Profit Maximization, Operations Strategy, Lean/Six Sigma, Reverse Logistics, Project Management
- Social Skills: Communication, Collaboration, Leadership, Adaptability, Cross-Cultural Competence, Conflict Resolution, Networking, Mentoring and Teaching, Industry and Academic Presentations, Active Listening, Problem Solving
- Programming: Python (Pandas, NumPy, SciPy, Matplotlib, Seaborn, Scikit-learn, Statsmodels, TensorFlow, PyTorch), SQL, Git
- Tools: Power BI, Tableau, Excel, Mode, Snowflake, Salesforce, Slack, Zoom, Word, PowerPoint, LaTeX
- Languages: English (Native), Japanese (Intermediate), Spanish (Basic)
- Community Service: Austin Oita Sister City Committee Member, Keep Austin Beautiful Volunteer, Japan Society of Boston