Z. Caner Taşkın, PhD

Principal Research Scientist
Operations Research / Decision Intelligence / Large-Scale Optimization

Bellevue, WA, USA | LinkedIn

Principal Research Scientist with 20+ years of experience building enterprise-scale decision intelligence systems integrating stochastic optimization, machine learning, and distributed software systems. Expertise spans mathematical programming, supply chain optimization, and large-scale optimization for real-time operational decision-making. Currently a Principal Research Scientist at Amazon following CTO leadership at ICRON Technologies and academic leadership at Boğaziçi University.

SELECTED TECHNICAL ACHIEVEMENTS

- **Production-Scale Decision Systems:** Developed stochastic optimization systems for Amazon from research prototypes to production deployment and large-scale A/B testing in operational environments.
- **Multi-Agent Optimization Systems:** Led scientific design of Amazon Agent for decentralized multi-agent supply-chain decision-making with privacy-preserving coordination.
- **Large-Scale Optimization Algorithms:** Developed algorithms for procurement, capacity planning, production scheduling, routing, inventory optimization, and global inventory flow tracking.
- **Enterprise Decision Intelligence Platforms:** Architected platforms integrating optimization, forecasting, simulation and machine learning.
- **Technical Leadership at Scale:** Led a 50+ person organization across applied science, software engineering, cloud infrastructure, and product development for enterprise optimization systems.
- **Research Leadership:** Published 40+ peer-reviewed papers in leading operations research journals, supervised 8 PhD and 10 MS students

TECHNICAL SKILLS

Optimization & Operations Research	Large-scale optimization, stochastic optimization, mixed-integer programming, convex optimization, network optimization, decomposition methods, distributed optimization, sequential decision making
Optimization Software	Gurobi, CPLEX, Xpress, Hexaly, Google OR-Tools
Machine Learning & AI	Reinforcement learning, neural networks, forecasting, hybrid ML + optimization systems, decision intelligence, differentiable optimization (CVXPYlayers)
Programming & Systems:	Python, C++, PyTorch, JAX, FastAPI, Streamlit, parallel computing, GPU computing, ML/OR system design
Cloud & Infrastructure	AWS, Azure, Docker, Terraform, distributed batch and on-demand compute architectures

PROFESSIONAL EXPERIENCE

Principal Research Scientist — Amazon **2025 – Present**

- Develop stochastic optimization algorithms for procurement under demand and lead-time uncertainty, reducing order volatility and improving in-stock availability in production
- Lead scientific design of Amazon Agent for decentralized supply-chain collaborative decision-making with vendor coordination and distributed optimization, with pilots demonstrating measurable cost savings
- Designed optimization algorithms for cross-dock capacity allocation across heterogeneous inbound channels, balancing overall utilization gains with prioritized capacity availability for high-value, short-lead-time orders

- Supervised the design, development, and production deployment of optimization systems for replenishment and warehouse slotting, leading to full-scale rollout across Amazon's distribution center network
- Mentor junior scientists and contribute to scientific and engineering design reviews across multiple teams

Chief Technology Officer (CTO) — ICRON Technologies **2016 – 2024**

- Led research, software engineering, cloud infrastructure, and product strategy for a 50+ person organization building enterprise decision optimization systems
- Directed cloud transformation of the enterprise optimization platform on Microsoft Azure, enabling a SaaS delivery model
- Built an integrated ML and optimization platform enabling end-to-end supply chain decision intelligence products
- Led strategic partnerships with Microsoft, Gurobi; managed Gartner/IDC analyst relations.
- Selected Deployments: Unilever (tea blending), Turkish Technic (aviation MRO), Turkish Cargo (cargo revenue management), Şişecam (production optimization)

R&D Director — ICRON Technologies **2009 – 2016**

- Architected core optimization engine, routing systems and high-performance solver infrastructure in C++, forming the technical foundation of the company's optimization platform
- Developed global inventory flow tracing ("global pegging"), providing automated cause-effect traceability and end-to-end visibility across complex supply chain networks
- Selected Deployments: ASML (semiconductor supply chain optimization), Vestel Electronics (sales & operations planning), Digipolis (healthcare workforce optimization)

Professor & Department Chair — Boğaziçi University **2009 – 2024**

- Conducted research in large-scale optimization, decomposition methods and decision systems
- Published 40+ peer-reviewed papers; supervised 8 PhD and 10 MS students
- Served as Department Chair and Principal Investigator on national research programs

SELECTED PUBLICATIONS (Google Scholar)

- A decomposition algorithm for market selection and production planning - *INFORMS Journal on Computing*
- Multiple instance classification via quadratic programming - *Journal of Global Optimization*
- Optimization-based decoding algorithms for LDPC convolutional codes - *IISE Transactions*
- Benders decomposition for maximum induced matching problem - *INFORMS Journal on Computing*
- Optimized sales and operations planning at Vestel Electronics - *INFORMS Journal on Applied Analytics*
- Optimal multileaf collimator leaf sequencing in IMRT treatment planning - *Operations Research*

EDUCATION

PhD, Industrial and Systems Engineering — University of Florida **2009**

MS, Industrial Engineering — Boğaziçi University

BS, Industrial Engineering — Boğaziçi University

HONORS & AWARDS

- IIE Pritsker Doctoral Dissertation Award (First Place)
- Turkish Science Academy Young Scientist Award (BAGEP)
- IISE Best Application Paper Award
- EURO Excellence in Practice Finalist