Joshit Mohanty

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Senior Data Scientist (Modeling & Simulation, Operations Research) with 5+ years building simulation platforms, digital twins, & NLP systems for complex commercial operations. Delivered $500K+ in production systems modeling, fleet maintenance, matching markets, & supply chain. Authorized to work in the US on F1 OPT/STEM.

TECHNICAL SKILLS

Simulation & Modeling: Agent-Based Modeling (NetLogo, AnyLogic, Mesa, Repast), Discrete Event Simulation, System Dynamics, Monte Carlo Simulation, Digital Twin Architecture, Sensitivity Analysis, Scenario Analysis, Stress Testing, Model Validation, Experimental Design, Statistical Modeling

NLP & Machine Learning: Python (Pandas, NumPy, scikit-learn), Word2vec, TF-IDF, Text Classification, Sentiment Analysis, Predictive Analytics, Anomaly Detection, Optimization, Forecasting, Time Series Analysis, Causal Inference, Feature Ranking, Uncertainty Quantification

LLM Integration & Automation: Claude API, GPT API, n8n, Prompt Engineering, Claude Code

Infrastructure & Tools: AWS HPC, SQL, MATLAB, Power BI, JIRA, Git

Domain Expertise: Operations Research, Process Design & Optimization, Supply Chain Simulation, Fleet Operations, Healthcare Systems

Program Management: Multi-stakeholder delivery, proposal writing, scope-to-delivery lifecycle, P&L ownership, client coordination, supply chain management

Standards: NASA-STD-7009A, ASME V&V 10/20/40, NIST AI RMF, Verra VCS 4.7, UN SDG

EXPERIENCE

Research Scientist, Modeling & Simulation | Old Dominion University | Norfolk, VA | Jan 2026 - Present

- Built a multi-method simulation platform (agent-based + discrete event) running 300M+ scenarios on AWS HPC to identify process breakdown patterns in networked organizations. Discovered two previously undocumented failure modes in distributed decision-making systems.
- Modeled the US medical residency matching market (42,000+ applicants) using agent-based simulation to identify systemic inefficiencies in candidate allocation. Delivered operational redesign recommendations to the funding client.
- Designed and ran computational experiments across 7,000+ algorithm generations, testing how agent behaviors evolve under different operational conditions.

Technical Program Lead, Fleet Analytics | ODU Research Foundation | Norfolk, VA | Sep 2023 - Dec 2025

- Managed $496K across 3 concurrent programs, coordinating deliverables between a prime contractor, client operations team, and research group.
- Built an NLP pipeline (Python, Word2vec, TF-IDF) that reads 160,000+ unstructured operational records, classifies work orders at 92% accuracy, and cuts manual processing time by 87%. System delivered to client and is still in production use.
- Designed evaluation criteria to validate predictive models across 100K+ scenarios, reducing model error rate by 21%.
- Created reliability diagnostic frameworks for fleet equipment, improving maintenance scheduling efficiency by 11%. Proposed a digital twin architecture (Process-Oriented Digital Thread) for predictive maintenance within the US Federal Government maritime operations.
- Wrote technical proposals that secured $350K+ in client funding. Managed requirements from scoping through final delivery.

Strategy Lead | Earth In Motion | Virginia Beach, VA | Apr 2023 - Aug 2023

- Launched an operational product from zero to $98K revenue in 8 weeks with 10+ clients. Managed full cycle from stakeholder buy-in through deployment to P&L reporting.
- Optimized an LLM-powered training module by designing evaluation criteria and testing output accuracy.

Improved workforce compliance by 25%.
- Built simulation models for carbon tracking under industry standards (Verra VCS 4.7, UN SDG). Improved operational forecasting by 12%.
- Created dashboards (Power BI) that reduced reporting cycles by 19%.

Program Director | AATWRI Group | Chennai, India | Feb 2022 - Mar 2023

- Directed a $100K product launch with a 12-person cross-functional team, delivering 18% ahead of schedule.
- Modeled system dynamics and process flows using MATLAB and simulation techniques to optimize coordination and material flow across distributed manufacturing operations.
- Implemented ERP system and managed end-to-end supplier coordination, production planning, and BOM validation for a dual-product manufacturing pipeline.

Systems Engineer | German Orbital Systems | Berlin, Germany | Jun 2019 - Aug 2019

- Led product development using shape memory alloy technology. Collaborated with manufacturing partners to improve production efficiency by 4%.
- Prototype successfully deployed and operational as of 2024.

EDUCATION

Ph.D., Engineering Management & Systems Engineering
Old Dominion University | Focus: Complex Systems, Simulation, Organizational Modeling

M.S., Systems Engineering | President's Award, Top 3%
Skolkovo Institute of Science & Technology

Research | Dept. of Aeronautics & Astronautics
Massachusetts Institute of Technology (MIT)

SELECTED PUBLICATIONS

- "Application Fever as Emergent Behavior: An Agent-Based Model of Medical Residency Matching." Winter Simulation Conference (WSC) 2026.
- "A vs. I in AI: Is there a Threshold to Engineered Intelligence?" 59th Hawaii International Conference on System Sciences (HICSS) 2026.
- "A meta-clustering framework for enhancing conversational AI in the healthcare sector." 20th Annual System of Systems Engineering Conference (SoSE), 2025.

Full list: Google Scholar Profile

PATENTS (GRANTED)

- Autonomous Fluid Dispensing Machine for agricultural and fire-fighting applications.
- Autonomous UV Sanitizing Robot, 96.7% disinfection efficiency. Recognized by Micron Technology as a Top 2% Global Innovator.
- Vehicle Blind Spot Reduction System with sensor integration and automated alerting.

CERTIFICATIONS & LEADERSHIP

Certifications: Anthropic: Agent Skills, Claude Code (2026) | Google Business Intelligence (2025) | Google Project Management (2022) | ICS Cybersecurity

Leadership: President, ASEM Student Chapter, ODU | Dean's Advisory Council, ODU | Team Lead, UN Space Advisory Council (12 members, 7 countries) | Judge & Mentor, MassChallenge & Verizon Incubator | Mentored 100+ graduate students across 6 systems engineering courses