

Joshit Mohanty

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Senior Research Engineer (Agentic AI, Modeling & Simulation, Digital Twins, Operations Research) with 5+ years building simulation platforms, digital twins, and systems for complex commercial operations. Expert in architecting secure, enterprise-grade multi-agent platforms and digital twins in compliance with industrial standards (ISA-95, ISO 23247). Contributed to \$700K+ in federally funded research programs, as Co-Principal Investigator on one and Graduate Research Assistant on two. Authorized to work in the US on F1 OPT/STEM OPT.

TECHNICAL SKILLS

Simulation & Modeling: Agent-Based Modeling (NetLogo, AnyLogic, Mesa, Repast), Discrete Event Simulation, Monte Carlo Simulation, Digital Twin Architecture, Scenario Analysis, Stress Testing, Model Validation, Experimental Design, Statistical Modeling, Dassault Cameo, SPEC Innovation's Innoslate, Siemens Team Center, NVIDIA Omniverse

Agentic AI & Orchestration: LLM APIs/ MCPs, LangGraph, n8n Workflows, Multi-Agent Swarms, Tool-Calling & Tool-Auto-Discovery, Prompt & Context Optimization, State-Managed Task Routing, Sentry, LLM-as-Judge frameworks

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

AI Safety, Governance & Compliance: NIST AI RMF 1.0, ISO/IEC 42001, SOC 2 Trust Services Criteria, Token-Signed Permission Gates, Instruction-Data Quarantining, Append-Only Transaction Auditing

Core ML & Data: Python (Pandas, NumPy, scikit-learn), Text Classification, Sentiment Analysis, Predictive Analytics, Anomaly Detection, Time Series Analysis, Causal Inference, Feature Ranking, Uncertainty Quantification

Industrial Ontologies & Standards: ISA-95/IEC 62264 Hierarchies, ISO 23247 Reference Frameworks, ISO 22400 KPI Semantics, ISO 14224 Reliability Taxonomies, RDF/Turtle Vocabularies, Cypher/Neo4j Exports

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

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

EXPERIENCE

Senior Research Engineer, Digital Twins | *PlaSiV* | San Jose, CA | May 2026 – August 2026

- *Details withheld, company in stealth. Available on request.*

Research Scientist, Modeling & Simulation | *Old Dominion University* | Norfolk, VA | Jan 2026 – May 2026

- Built a multi-method simulation platform (agent-based modeling) 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 | *Senate of Virginia (Bill DeSteph)* | Virginia Beach, VA | Apr 2023 - Aug 2023

- Launched an operational product from zero to \$98K revenue in 8 weeks with 5+ clients. Managed the 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%.

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 reduce material-handling delays by over ~38% across distributed manufacturing operations.

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, United States | Focus: Complex Systems, Simulation, Organizational Modeling

M.S., Systems Engineering | President's Award, Top 3%

Skolkovo Institute of Science & Technology, Russian Federation

M.S. Research | Dept. of Aeronautics & Astronautics

Massachusetts Institute of Technology (MIT), United States

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