Jose Tupayachi, Ph.D. Candidate

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Education

Ph.D. Industrial Engineering, University of Tennessee, Knoxville, TN, 2024–present
M.S. Industrial Engineering, University of Tennessee, Knoxville, TN, 2024 (GPA: 3.9)
B.S. Industrial Engineering, Pontifical Catholic University of Peru, Lima, Peru, 2020

Professional Positions

2025–present Graduate Researcher, Oak Ridge National Lab / Oak Ridge Institute for Science and Education
2025–2025 Hosted Researcher, Oak Ridge National Lab
2022–present Graduate Research Assistant, University of Tennessee, Knoxville
2022–2024 Graduate Teaching Assistant, University of Tennessee, Knoxville
2022–2022 Data Engineer, INDRA (Full-time)
Tools: Python, Shell, Apache Spark, Hadoop, HQL, Jenkins, Oracle, PySpark
2022–2022 Business Intelligence Analyst, GLOBOKAS (Full-time)
Tools: T-SQL, Google BigQuery, ETL Pipelines, Custom Macros
2020–2021 Data Analyst Trainee, ENEL (Full-time)
Tools: PyQt, Slurm, GNU parallel , Power BI, Tableau, SQL, T-SQL, Salesforce

Project Experience

- DOE ARPA-E: Cognitive Freight Transportation Digital Twin (RECOIL) (#DE-AR0001780)
- Tennessee Dept. of Health: SmartShots Mobile App for Childhood Vaccination Rates
- The Rita and Alex Hillman Foundation: Active Careguiver Toolkit - A Nursing driven intervention
- NSRD: AI-Agent Driven Survey and Validated Literature Review for Discovering New Ceramic Materials
- NSRD: Explainable Machine Learning for Extreme Event Prediction Using Long-Term Meteorological Records of the Oak Ridge Reservation
- NSRD: Automated QA engine with fine tuned vision transformers - A speed and direction dual input architecture
- NSRD: ML-Assisted Atmospheric Hazard Modeling with Automated Dashboard Generation

Selected Publications & Submissions

Tupayachi, J., Khan, A.N., Li, X. Scalable Decentralized Prognostics for Industrial Systems under Data Heterogeneity. *Computers and Electrical Engineering* (Third Review Round).
Xu, H., Sun, Y., **Tupayachi, J.**, et al. Towards Autonomous Urban Logistics Optimization via Generative AI and Agentic Digital Twins. *Computers & Industrial Engineering* (Submitted).
Tupayachi, J., Camur, M.C., Heaslip, K., Li, X. Spatio-Temporal Graph Convolutional Networks for EV Charging Demand Forecasting. *Applied Energy* (Submitted).
Xu, H., **Tupayachi, J.**, Yu, X.Y. Context-Aware Visual Prompting: Automating Geospatial Web Dashboards with LLMs and AI Agents. *Int. J. of Applied Earth Observation and Geoinformation* (Submitted).
Wyatt, T., Taylor, P., **Tupayachi, J.** et al. Design and Usability Testing of SmartSHOTS: A Mobile App to Reduce Vaccine Barriers for Children Aged 0-24 Months. *Health Informatics Journal* (Submitted).
Tupayachi, J., Xu, H., Omitaomu, O.A., et al. (2024). Towards Next-Generation Urban Decision Support Systems through AI-Powered Construction of Scientific Ontology Using LLMs. *Smart Cities* 7(5), 2392–2421.
Tupayachi, J., Ferguson, M.M., Li, X. (2024). Simulation-Based Real-Time Deep RL for Fighting Wildfires. *ANNSIM 2024*, 1–12.
Li, X., **Tupayachi, J.**, et al. (2023). Drone-aided Delivery Methods: A Methodological Review. *Drones* 7(3), 191.
Tupayachi, J., Wyatt, T., Taylor, P., et al. (2025). Design and Usability Testing of SmartSHOTS: A Mobile App to Reduce Vaccine Barriers for Children 0-24 Months. *Proc. of the 58th Hawaii Int. Conf. on System Sciences*.
Xu, H., Li, X., **Tupayachi, J.**, Lian, J.J., Omitaomu, O.A. (2024). Automating Bibliometric Analysis with Sentence Transformers and Retrieval-Augmented Generation (RAG): A Pilot Study in Semantic and Contextual Search for Customized Literature. *Proc. of the 2nd ACM SIGSPATIAL Int. Workshop on Advances in Urban-AI*.
Tupayachi, J., Silva, L. (2022). Better Efficiency on Non-performing Loans Debt Recovery and Portfolio Valuation Using Machine Learning Techniques. *POMS Lima, Peru, December 2-4, 2021*.

Awards & Recognition

- IISE Future Faculty Fellows (2025–2026)
- Best Paper Award, 51st Conf. on Computers and Industrial Engineering, Sydney (2024)
- IISE DAIS Student Mobile App Competition Winner, Montreal (2024)
- Graduate Holiday Fellowship, University of Tennessee (2022, 2023, 2024)
- HIDA Helmholtz Visiting Researcher - Karlsruhe Institute of Technology (KIT) *Year*: 2024, Germany | Awarded.