

Thomas J. James

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Professional Summary

Machine Learning Engineer and Data Scientist with a Master's in Applied Data Science (University of Michigan) and 5+ years of experience building and deploying end-to-end ML pipelines, multi-agent AI systems, and predictive models across real-world domains. Expertise in NLP, computer vision, time-series forecasting, and generative AI. Proven ability to translate complex data into actionable business insights and communicate results clearly to technical and non-technical stakeholders. Passionate about applying AI to solve high-impact, production-scale challenges.

Technical Skills

- **Programming & Tools:** Python, SQL, R, Git, Bash, Prompt Engineering
- **Machine Learning & AI:** Scikit-learn, PyTorch, TensorFlow, Keras, XGBoost, PySpark, Transformers, LangChain, CrewAI, HuggingFace, NLTK, spaCy, Rasterio
- **Data Engineering & Analytics:** Pandas, NumPy, ETL Pipelines, Power BI, Tableau, Seaborn, Altair
- **Cloud, MLOps & Platforms:** AWS SageMaker, Docker, Streamlit, GitHub, Jupyter, CI/CD
- **Specializations:** NLP & LLM Agents, Computer Vision, Time-Series Forecasting, Generative AI, Geospatial Analytics, Predictive Modeling, Recommender Systems

Professional Experience

- **Project Manager & Data Scientist – Adaptive AI Tutoring Platform** Remote
Independent Project (Stakeholder: Jordan Ministry of Education) May 2025 – Present
 - Architected and deployed multi-agent AI system using LangChain, RAG pipelines, and LLMs (Llama3, Mistral) with benchmarking across Groq and OpenAI APIs to optimize autonomous tutoring performance.
 - Built vision-language model pipelines (docling) for multilingual document processing in Arabic and English; integrated LLM evaluation metrics to guide agent selection and deployment decisions.
 - Managed cross-functional team of engineers, educators, and data scientists using SCRUM/Agile; aligned technical outputs with measurable learner outcomes and stakeholder KPIs.
- **Lead Machine Learning Engineer – Extreme Weather Forecasting System** Remote
Omdena (Client: KESHO AI) Jun 2024 – Sep 2024
 - Designed and deployed production CNN-LSTM and ConvLSTM deep learning models on ERA5/Copernicus satellite data, achieving 85% forecasting accuracy for floods, heatwaves, and extreme rainfall.
 - Built end-to-end real-time data pipeline processing 50GB+ of daily meteorological data; deployed automated SMS alert system reaching 10,000+ users in rural Tanzania.
 - Led geospatial feature engineering using pixelized segmentation and Rasterio; compared CNN, ConvNeXt, and LSTM-CNN architectures to identify optimal production model.
- **Lead Machine Learning Engineer – Predictive Disease Forecasting** Remote
Omdena (Stakeholder: Liberian Medical Agency) Jan 2024 – May 2024
 - Built and deployed RNN and LSTM time-series models forecasting malaria case counts from epidemiological, agricultural, and precipitation data; achieved 78% accuracy in 30-day forecasts.
 - Applied XGBoost and decision tree feature selection with multivariate analysis to improve model interpretability and guide public health decision-making.
 - Delivered actionable predictive dashboards via Streamlit to support intervention strategies targeting 3,548 annual malaria deaths.
- **Machine Learning Engineer – Multi-Agent AI Travel Assistant** Remote
Omdena May 2024 – Jul 2024
 - Developed and deployed multi-agent LLM system using CrewAI and LangChain with Mistral and Llama3; deployed via ChatGroq APIs and Streamlit for real-time inference at scale.
 - Engineered prompt pipelines and agent task workflows for autonomous itinerary planning, cultural recommendations, and transit guidance.
- **Geospatial Data Scientist – Computer Vision for Environmental Monitoring** Remote
Omdena (Trieste, Italy Chapter) Jan 2024 – Jun 2024
 - Applied semantic segmentation and scene classification using U-Net++ and DeepLabV3 CNN models on multi-spectral satellite imagery to map and monitor Mediterranean seagrass depletion.
 - Implemented image segmentation via pixelation and satellite-derived bathymetry banding; conducted data augmentation to improve model generalization and ecological feature detection.

Additional Experience & Leadership

- **Professional Tutor** – Math, Science & Standardized Exams (2010–Present): Tutored 200+ students across academic levels; maintained 4.9/5 rating. Demonstrates exceptional ability to communicate complex concepts to diverse, non-technical audiences.
- Assistant Scoutmaster, Committee Chairperson, Camp Commissioner – Boy Scouts of America (2009–2017): Led youth programs, cross-team collaboration, and long-term planning.

- Hurricane Disaster Relief Volunteer – coordinated recovery operations under pressure.

Education

- **University of Michigan** Ann Arbor, MI
Master in Applied Data Science *Apr 2023*
 - Capstone: *Online Course Recommender System by Occupation* – 2nd Place, School of Information Capstone Exhibition
 - GPA: 3.7/4.0 | School of Information Leadership Award
- **Benedictine University** Lisle, IL
Bachelor of Science in Biology *May 2009*
 - Research: *Effects of Echinacea purpurea on 7F2 Osteoblast Cells*

Professional Service & Awards

- **Society of Learning Analytics and Research** International
Professional Member *Oct 2022 – Present*
- **Eagle Scout** Dec 2001

Languages

- **Languages:** English (Native), Spanish (Fluent)