

# JOHN SALAKO

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## Summary

- Data Scientist / Machine Learning Engineer with strong foundations in applied machine learning, large-scale data systems, and geospatial analytics.
- Proven experience building scalable ML pipelines, processing multi-terabyte datasets using high-performance computing, and deploying cloud-native solutions.
- Adept at translating complex data into actionable insights at scale.

## Experiences

### **Basso Digital Agronomical Lab—Michigan State University**

*Geospatial Analyst / Research Assistant*

**Aug 2021 - Present | East Lansing, MI**

- Built large-scale yield stability maps across millions of hectares using multi-year satellite data, enabling data-driven decision-making at field and regional scales.
- Designed and optimized distributed geospatial pipelines on HPC systems (120+ CPU cores, 500+ GB RAM), reducing processing time from weeks to hours.
- Developed feature engineering workflows integrating multi-resolution imagery (Landsat, Sentinel-2, Planet), improving cross-sensor model robustness.
- Applied machine learning techniques (regression, LSTM, CNNs) to high-dimensional spatiotemporal datasets.
- Implemented end-to-end Python pipelines (NumPy, Pandas, scikit-learn) with strong emphasis on reproducibility and performance.
- Designed and deployed data ingestion modules that increased satellite data acquisition throughput by ~500%.

### **Computational Research (Ground Penetrating Radar (GPR) & ML)**

- Developed Python-based 3D reconstruction pipelines using GPR data and convolutional neural networks to model subsurface root architecture.
- Processed and reconstructed hundreds of tree root systems using HPC resources, enabling scalable below-ground phenotyping.
- Designed and deployed data ingestion modules that increased satellite data acquisition throughput by ~500%.

### **MSU Cloud Computing Fellowship—Institute for Cyber-Enabled Research**

*Cloud Computing Fellow*

**Aug 2022 - Apr 2023 | East Lansing, MI**

- Led cost-performance optimization of a machine learning web application deployed on Microsoft Azure.
- Improved system reliability and runtime efficiency through architectural tuning and monitoring.

## Education

**Michigan State University—East Lansing, MI**

**Dual Ph.D. (Expected May 2026)**

- Computational Mathematics, Science, and Engineering (CMSE)
- Earth & Environmental Sciences (EES)

**GPA: 4.00 / 4.00**

**Michigan State University—East Lansing, MI**

**M.S., Earth & Environmental Sciences (Geological Sciences) – May 2023**

**GPA: 3.96 / 4.00**

## Publications

- Assessing Tree Root Distributions Using Ground-Penetrating Radar and Machine Learning Algorithms—Published
- Optimizing Power Consumption Forecasts: A One-Step-Ahead Approach with Enhanced Lag Selection — Under Review

## Scientific Presentations

- Buffer Zones and Yield Stability: A Remote Sensing Assessment across Corn and Soybean Systems in Michigan and Iowa, ASA Conference, 2025
- Evaluating the Impact of Image Resolution on Yield Stability Maps, ASA Conference, 2024
- Classification of Spatiotemporal Field Data for Biodiversity Estimation, AGU Conference, 2024
- Integrating Remote Sensing and AI for Efficient Land Cover Classification, AGU Conference, 2024
- Optimizing Machine Learning Web Application Runtime using Azure Web Application Services, MSU Cloud Computing Fellows 4th Annual Symposium, 2023
- 3D Reconstruction of Tart Cherry Tree Roots using Ground Penetrating Radar (GPR) and Advanced Processing Algorithms, 15th Annual MSU Graduate Academic Conference, 2023.

## Awards

- First Place, Ph.D. Poster Competition — Precision Agriculture Systems, ASA (2024)
- MSU Cloud Fellowship – Icer (2022)

## Technical Skills

- Programming: Python (advanced), R, MATLAB, C
- Machine Learning: Scikit-learn, TensorFlow, LSTM, CNNs, Data-Driven ML
- Data Systems: HPC, parallel computing, large-scale data pipelines
- Cloud: Microsoft Azure