Jason Chandler Weeks

(404) 902-9078 jweeks12@vols.utk.edu https://www.linkedin.com/in/chandler-weeks-4026a0189/

Education

University of Tennessee, Knoxville **Expected Graduation: May 2027**
Masters of Science in Computer Science GPA: 3.50/4.00 Knoxville, TN

Mississippi State University **May 2025**
Bachelors of Science in Software Engineering GPA: 4.00/4.00 Starkville, MS

Professional Experience

Global Computing Laboratory **Aug 2025 – Present**
Graduate Research Assistant Knoxville, TN

- Enhanced a soil moisture inference pipeline across North America, increasing spatial resolution from $27km^2$ to $30m^2$ by fine-tuning geospatial foundation models and integration of a forecasting algorithm.
- Designed scalable data preprocessing pipelines to remove cloud contamination and optimize terabytes of geospatial satellite imagery datasets for high-accuracy soil moisture forecasting.
- Authored and deployed technical documentation for existing soil moisture inference tools to support development and usability for scientists.

Mississippi State Department of Computer Science **Feb 2024 – May 2025**
Undergraduate Research Assistant Starkville, MS

- Developed a machine learning algorithm to predict changes in Vesicular Stomatitis Virus cases per month to use as an early warning strategy for disease spread.
- Refined preprocessing steps to cluster results to eco-regions, maximizing interpretability of results and algorithm efficiency without compromising accuracy.
- Collaborated with USDA scientists to design a scientific data visualization tool, significantly improving researchers' ability to analyze and communicate results.

C-Spire **May 2023 – Aug 2023**
Software Developer Intern - Tools & Automation Team Ridgeland, MS

- Modified and maintained a Microsoft SQL Server database to address evolving software requirements
- Created comprehensive documentation for software products developed by the Tools & Automation team, increasing usability for external teams.
- Developed a dynamic KPI reporting model, leveraging Power BI to automate data updates, visualize performance trends, and support decision making.

Technical Skills

Research Interests: Machine Learning, Big Data Analytics, HPC
Languages: Python, R, C/C++, JavaScript, HTML/CSS
Developer Tools / Libraries: Pandas, NumPy, GDAL, Scikit-Learn, PyTorch, matplotlib, PyTest, React, SQL
Misc: Linux, Git, Excel, Power BI, Jupyter Notebooks, Google Earth Engine, QGIS

Publications

[1] T. Rashme, Z. Zhang, J. Weeks, M. Benbrahim, Z. Zhang, Z. Chen, N. Pillai, R. Ramkumar, and B. Nanduri, *Graph symbolic regression to interpret the propagation of Vesicular Stomatitis Virus across the U.S. and Mexico.* New York, NY, USA: Association for Computing Machinery, 2025, p. 977–980. [Online]. Available: https://doi.org/10.1145/3748636.3764166

Projects

Traffic Agents

- Simulated multi-city urban traffic scenarios using SUMO, modeling diverse congestion levels to evaluate infrastructure performance.
- Designed reinforcement learning based traffic signal agents that optimized phase transitions, reducing average travel times by 13% and vehicle collisions by 25% compared to fixed-timer systems.

Memory Hierarchy Simulator

- Created a full memory hierarchy simulator in C++, modeling a TLB, page table, L1 data cache, and inclusive L2 cache with configurable associativity, line sizes, replacement policies (LRU), and write policies.
- Implemented virtual-to-physical address translation, cache indexing/tagging, and page fault handling from trace input files, producing detailed per-access statistics to validate hardware-level memory behavior.

SOMOSPIE

- Enhanced an AI-driven soil moisture up-scaling pipeline through integration of geospatial modeling techniques and satellite imagery datasets, resulting in accurate high-resolution predictions and forecasting.
- Monitored system-level metrics, including memory usage, CPU/GPU utilization, and disk usage to optimize model and data preprocessing performance.

Relevant Coursework

- Computer Systems Organization
- Artificial Intelligence
- Deep Learning
- Computer Vision
- Database Management
- Algorithms
- Operating Systems
- Data Structures and Algorithms