Dave Austin, Ph.D.

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Professional Summary

Data engineer with a Ph.D. in computational physics and experience building and operating data pipelines in both research and production environments. Currently serve as the primary data engineer at an early-stage company, designing ingestion workflows, managing cloud data infrastructure, and supporting analytics across multiple business domains. Background in large-scale scientific computing brings strong experience with automation, distributed systems, and turning complex data problems into reliable working systems.

Core Technical Capabilities

Data Platform Architecture: ETL/ELT design, data modeling, governance foundations, batch and event-driven systems, data quality frameworks

Cloud & Infrastructure: AWS (S3, Lambda, EC2, CloudWatch), Snowflake, PostgreSQL, Docker, CI/CD

Languages: Python, SQL, Bash, TypeScript, MATLAB, Mathematica

AI & Analytics Foundations: OpenAI API, LangChain, agentic workflows, dataset preparation for analytical and AI workloads

Distributed Computing: HPC workflows, SLURM orchestration, large-scale simulation pipelines

Professional Experience

Data Engineer / Software Engineer (Platform Ownership)
Bear Cognition April 2025 – Present

- Own and architect the company's data platform, designing ingestion, modeling, and transformation workflows supporting analytics, logistics, marketing, and reporting teams.
- Establish data standards, schema design practices, and reliability patterns across batch, scheduled, and event-driven pipelines.
- Serve as primary technical owner and administrator of the Snowflake environment, managing performance, governance, and scalable data organization.
- Designed agentic workflows automating ingestion and validation of heterogeneous partner datasets, reducing manual intervention.
- Engineered ingestion pipelines to reliably integrate inconsistent partner datasets, designing normalization and validation logic to transform semi-structured inputs into production-ready data models.
- Built monitoring utilities summarizing Prefect warnings and failures to improve visibility into missed or delayed data processing.
- Implemented retry logic, scheduling strategies, and secret management for production workflows.
- Partner with stakeholders across business functions to translate operational needs into data products, enabling reporting and decision support.
- Contributed to full-stack development in a Nuxt + TypeScript application, delivering bug fixes, API integrations, and backend improvements.

Postdoctoral Scholar — Data Engineering, Scientific Computing & Research Leadership

University of Central Florida Aug 2024 – April 2025

- Designed reproducible computational workflows enabling scalable execution of quantum-mechanical simulations across HPC environments.
- Developed automation and monitoring systems improving reliability of long-running distributed compute jobs.
- Mentored graduate researchers on workflow automation, SLURM scheduling, and reproducible data practices.
- Standardized data processing pipelines used across interdisciplinary research teams.
- Translated experimental requirements into computational models supporting data-driven scientific analysis.

Graduate Research Assistant (Data Engineering / Scientific Computing)

University of Central Florida Aug 2018 – Aug 2024

- Built Python-based data pipelines processing large-scale simulation outputs across multi-node HPC environments.
- Implemented automated job orchestration and recovery logic using SLURM.
- Processed datasets exceeding 100M data points with automated secure transfer via SSH/SCP.
- Optimized CPU allocation and workload scheduling to improve computational efficiency.

Teaching Assistant *University of Central Florida* Aug 2019 – May 2020

- Led undergraduate physics laboratories and supported students in data analysis and experimentation.
- Developed grading rubrics and delivered technical instruction to classes of 20–30 students.

Education

Ph.D. in Physics (Computational Material Science)
University of Central Florida, 2024
Dissertation: *Electronic Structure and Catalytic Behavior in Low-Dimensional Materials*

B.S. in Physics
College of Charleston, 2018

Research Impact

8 peer-reviewed publications in computational physics and materials science demonstrating advanced modeling, large-scale data analysis, and interdisciplinary collaboration.