RITAV DAS

Dublin, OH | 614-822-7540 | das.494@osu.edu | linkedin.com/in/ritav-das

EDUCATION

The Ohio State University — Columbus, OH

B.S. Electrical and Computer Engineering — Expected December 2028

Entered with 96 credit hours (senior standing) via dual enrollment (OSU Academy, Columbus State) and AP credit. GPA: 3.86.

Coursework: Data Structures & Algorithms, C++ for Engineers, Applied PDEs, Linear Algebra, Differential Equations, Statistical Analysis, Signals & Systems (ECE 2050), Digital Logic (ECE 2060), Intro to Electronics (ECE 3020), Analog Circuits & Systems (ECE 2020)

EXPERIENCE

Undergraduate Researcher — Oct 2024 – Present

Hall Research Group (Advisor: Prof. Lisa Hall), The Ohio State University — Columbus, OH

- Run molecular dynamics simulations in LAMMPS as Slurm batch jobs on Ohio Supercomputer Center Linux clusters to model the effects of chirality in polycatenane and complex polymer systems.
- Process and visualize multi-gigabyte simulation output in Python to validate results against theoretical predictions.
- Selected as a first-author oral presenter at the Midwest Thermodynamics and Statistical Mechanics Conference 2025 and the OSC Research Symposium 2025 – the only high school student at either.
- Second author on a manuscript in preparation.

Summer Institute Participant — Jun – Jul 2024

Ohio Supercomputer Center — Columbus, OH

- Selected for a competitive high-performance computing program (~20% acceptance rate); built a web application to render and display 3D files through a user-facing interface.

Co-Captain & Programming Lead — Aug 2023 – Aug 2025

FIRST Tech Challenge Team 11187 — Dublin, OH

- Wrote autonomous and tele-operated robot control software in Java, including PID control loops with encoder feedback, and maintained the team codebase in Git.
- Led a 10-member team as co-captain, directing integration of mechanical, electrical, and software subsystems and designing robot parts in Onshape.

Low Voltage Electronics Member — Aug 2025 – Sep 2026

Formula Buckeyes SAE — Columbus, OH

- Wired the low-voltage harness for FB26, the team's first electric vehicle, routing, terminating, and labeling connections from electrical schematics alongside undergraduate members.

PROJECTS

Algorithmic Trading Research & Execution System — Oct 2026 – Present

Independent project | Python, C#, NinjaTrader — Dublin, OH

- Built a multi-agent quant research platform that generated and backtested 2,300+ strategies on 6+ years of futures and crypto data, rejecting 99% through cost modeling, multiple-testing correction and a one-shot, hash-locked holdout.
- Combined 15 low-correlation strategies into a portfolio that returned 7.3% with a 1.49 profit factor and 3% max drawdown on 6 months of untouched out-of-sample data (simulated $50K account).
- Engineered the execution stack: a Python signal engine driving a C# NinjaTrader add-on with idempotent position targets, 10 independent safety rules and a watchdog; an 87,552-bar replay matched all 172 backtest trades.

Skua: Distribution Transformer Inspection Ranking — Oct 2026 – Present

Independent project | Python, scikit-learn — Columbus, OH

- Engineered 39 point-in-time features (protective devices to the breaker, overhead-line exposure within 100–250 m, prior damage, elevation, NLCD canopy) and trained a monotone-constrained gradient-boosting model ranking 26,959 transformers by storm risk.
- Ran a forward-in-time backtest (trained 2023–24, tested 2025) with circuit-grouped 5-fold CV and leakage controls: AUC 0.685 vs. 0.583 for oldest-first; the top 10% held 21.1% of units with 2025 storm damage nearby vs. 15.8%.
- Wrote a technical report with circuit-level bootstrap confidence intervals and documented limitations; one command rebuilds every result, and report tables are generated from pipeline outputs.

SKILLS

HPC & Computing: Linux/Unix, Bash, Slurm (OSC clusters), LAMMPS, Git, GitHub, Jupyter
Languages: Python, C++, C#, Java, Bash
Scientific Python & Analysis: NumPy, pandas, matplotlib, scikit-learn, MATLAB, curve fitting, error propagation, bootstrap CIs
Simulation & Modeling: Molecular dynamics, gradient-boosting models, SPICE/LTspice, Simulink