COOPER SANDERS

+1 (336) 707-6558 | cs8005@nyu.edu | coopersanders.com | in cooper6558 | cooper6558

INTRODUCTION

I am a PhD Student in Electrical Engineering, studying computer architecture and VLSI under Professor Ramesh Karri at New York University. I'm interested in developing energy efficient AI accelerators using approximate, analogue, and asynchronous architectures, and models and infrastructure for energy vs. accuracy tradeoffs in those architectures. My life goal is to produce research, scientists, and engineers that will bring this future paradigm to life as a tenured professor at an R1 university.

EXPERIENCE

- **Cadence Design Systems [🌐]** *June 2024 - July 2025*
  Application Engineer San Jose, CA
  ◦ Implemented multi-phase incremental compile strategies for **hardware-accelerated GPU emulation** flows, saving days of runtime.
  ◦ Integrated place and route flow with proprietary client infrastructure.
  ◦ Completed bring-up projects to: remove consecutive inverters from a DSP with Cadence synthesis infrastructure; migrate RTL for a hardware compressor to Cadence verification infrastructure; verify sous-vide controller with UVM.
  ◦ Acquired **advanced industry training in digital design**, verification, implementation, and EDA.

- **Los Alamos National Lab [🌐]** *May - August 2022*
  Research Intern Los Alamos, NM (Remote)
  ◦ Optimized naive GPU kernels, yielding order-of-magnitude speedups for importance-based data sampling and **resulting in a published paper**.
  ◦ Explored parallelization strategies for a novel data sampling algorithm.
  ◦ Contributed to **VizAly-Foresight, an open source compression benchmark** tool for domain scientists.
  ◦ **Presented results** at Clemson's Undergraduate Research Symposium.

- **Clemson University FTHPC Lab [🌐]** *May - August 2021*
  NSF REU Student Clemson, SC
  ◦ Studied effects of lossy compression on statistical correlation analysis.
  ◦ Investigated ways to scale genomics workflows to heterogeneous clusters.

- **Clemson University Watt Family Innovation Center [🌐]** *May - August 2020*
  Research Intern Clemson, SC (Remote)
  ◦ Trained and deployed forecasting models to **run efficiently at scale** on heterogeneous compute systems.
  ◦ Balanced efficiency vs quality-of-results tradeoffs of LSTM and ARIMA machine learning models for energy use forecasting.

UNDERGRADUATE RESEARCH FOR CREDIT

- **High Performance Cluster Computing** *Two years; Five total credit hours*
  PI: Assoc. Prof. Jon Calhoun
  Competed at the 2021 and 2022 SC Student Cluster Competitions where my team won **Best Poster**, building mini clusters out of Raspberry Pi's and a real one out of Dell-sponsored hardware. Specialized in HPCG and CUDA, and **presented multiple years** at Clemson's Creative Inquiry Symposium.

- **IBM Watson in the Watt** *One semester; Two total credit hours*
  PI: Asst. Prof. Hudson Smith & Dr. Carl Ehrett
  Developed algorithms and frameworks to accelerate the scoring of literacy exams in elementary schools using speech-to-text services from IBM's Watson AI suite, and **presented results at Clemson's AI Symposium**.

- **Machine Learning at Scale** *One year; Two total credit hours*
  PI: Assoc. Prof. Yuyuan "Lance" Ouyang
  Deployed reinforcement learning algorithms to an Nvidia DGX-2 AI Workstation to learn and play various arcade games.

- **History of The Honors College** *One semester; One total credit hour*
  PI: Assoc. Prof. Joshua Catalano
  Investigated primary sources in Clemson's special collections archive and conducted oral history interviews to piece together the origins of Clemson University's Honors College.

EDUCATION

- **New York University**   *May 2030 (Expected)*
  Doctor of Philosophy, Electrical Engineering
  Advisor: Professor Ramesh Karri; IEEE Fellow & Department Chair
- **Clemson University**   *December 2023*
  Bachelor of Science, Electrical Engineering
  Bachelor of Science, Computer Engineering; Minor, Mathematical Sciences
  *GPA: **3.89/4.00** (**Honors** & **Magna Cum Laude**)*

HONORS AND AWARDS

- **NSF Graduate Research Fellowship** Honorable Mention 2025.
- New York University School of Engineering Fellow.
- Clemson University Dixon Fellow.
- Clemson University Honors College.
- **Best Poster** IndySCC22 at Supercomputing '22.
- National Science Foundation Research Experiences for Undergraduates Student.
- Clemson Marching Band **Featured Trombone Soloist**.

PUBLICATIONS

M. H. Fulp, D. Fulp, C. Zou, **C. Sanders**, A. Biswas, M. Smith, J. C. Calhoun. (2023). [**Accelerated dynamic data reduction using spatial and temporal properties**](). *International Journal of High Performance Computing Applications*, Vol. 37, Issue 5, pp. 539-559. DOI: 10.1177/10943420231180504

POSTERS AND PRESENTATIONS

- **C. Sanders**, L. Durham, M. M. Martinez, D. Krasowska, E. Gindlesperger, B. Schlueter, J. C. Calhoun. (2022). **IndySCC 2022: Random Access Clemories**. *International Conference for High Performance Computing, Networking, Storage and Analysis (SC22) Indy Student Cluster Competetion (IndySCC)*. **Best Poster**, IndySCC '22.

- **C. Sanders**, J. C. Calhoun. (2022). **Parallelization Strategies for GPU Accelerated Data Sampling**. *9th Annual Summer Undergraduate Research Symposium @ Clemson University*.

- **C. Sanders**, S. Lam, A. Pendris, D. Krasowska, E. Gindlesperger, S. Ranjan. (2021). **SCC2021: Team Death Valley Computing**. *International Conference for High Performance Computing, Networking, Storage and Analysis (SC21) Student Cluster Competetion (SCC)*.

- **C. Sanders**, A. Abaunza, C. Ehrett, D. Herro, CC Bates. (2020). **Leveraging AI for Semi-Automatic Scoring of Running Records**. *Watson-in-the-Watt AI Virtual Symposium @ Clemson University*.

- **C. Sanders**. (2019). **But Can It Run Doom? Building a Breadboard Computer**. *MakerDay 7 @ Clemson University*.

- R. Catoe, E. Gindlesperger, A. Mahmood, T. Myers, **C. Sanders**, W. Smith. (2023). **Targeted Audio for Those Suffering Hearing Loss**. *Clemson Spring 2023 ECE Senior Design Poster Session*.

- T. Joseph, A. Garcia, S. Lam, W. Fey, D. Krasowska, E. Gindlesperger, B. Schlueter, C. Durham, **C. Sanders**, M. M. Herrera, J. C. Calhoun. (2023). **High-Performance Cluster Computing: Learning the Applications of Computing Methodologies in STEM Disciplines**. *18th Annual Focus on Creative Inquiry (FoCI) Poster Forum @ Clemson University*.

- C. Holt, G. Dube, S. Ranjan, **C. Sanders**, A. Bruner, W. Gossman, S. Placke, N. Heitzeg, J. Hollowell, J. C. Calhoun. (2021). **High-Performance Cluster Computing: Teaching Young Scientists and Engineers Future Computing Methodologies**. *16th Annual Focus on Creative Inquiry (FoCI) Poster Forum @ Clemson University*.