Himendra Perera – khperera@ncsu.edu **–** https://khperera.github.io/Personal-Website/

Experience

Research Assistant, Chemical Engineering August 2019 – Present
Chemical Engineering Department, NC State University Raleigh, NC

- Specialized in HPC and analytics to address challenges like polymer processing cost optimization, video featurization for cheaper solar cells, and drug release to improve crop yields.
- Combined academic research with industry by working with ExxonMobil, Eastman, 3M and Dow.
- Led and mentored teams in 6 projects that packaged sensor integration, data parsing, data storage, and data science into software.
- Written and obtained $575,000 worth of academic and industrial research grants, exhibiting persuasion and scientific communication skills.

Research & Development Intern May 2018 – August 2018
Sonoco Products Company Hartsville, SC

- Led two R&D projects in packaging, collaborating with operators and technicians to develop technology that reduced plastic usage by 50%.
- Presented research results to product area VP and other non-scientific shareholders.

Projects

Physics Informed Neural Nets for Estimation of CO2 Diffusion Constant

- Trained a ML model using TensorFlow and DeepXDE to optimize a chemical process using mixed models of data derived from experiments and literature.
- Integrated into Eastman Chemical's workflow, resulting in over $1,000,000 of savings with improved simulation accuracy and process parameter optimization.

Real-Time Data Ingestion, Cleaning, and Storage for Inline Fluid Analysis

- Designed a Python/C++ solution for high frequency sensor data capture, achieving a 10x performance over commercial software.
- Established streaming architecture in lightweight Linux OS, backed by SQLite.
- Cleaned data with signal processing techniques, such as super sampling and Fourier transforms.
- Developed a PyQt5-based GUI to encourage lab-wide tool adoption.

Technical Project Lead for Automation and Data Integrity of ACS Conference

- Spearheaded a data cleaning and validation team for a conference with over 500 attendees.
- Engineered a robust testing infrastructure by unit testing critical code.
- Applied real-time automation process in Python that led to a 95% reduction in workload.

Internet-Connected PID Controller for Polymer Extruder

- Built and coded an internet-connected PID controller for a 1-ton extruder, implementing responsive control loops and safety mechanisms.
- Developed monitoring GUI and integrated with thermal control system.

Education

PhD Chemical Engineering (data science emphasis) March 2024
NC State University, Raleigh, NC 3.89/4.0
B.S. Chemical Engineering (computer science emphasis) May 2019
Clemson University 3.98/4.0

Skills

- Programming: Python, Java, C++, C, SQL, JavaScript, HTML, Linux, Git, MATLAB
- Data science: Pandas, TensorFlow, DeepXDE, SciKit, OpenCV, NumPy, Signal Processing