JOSHITHA PILLA

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EDUCATION

Johns Hopkins University, *Baltimore, MD* May 2026
MSE/BS in Chemical and Biomolecular Engineering GPA: 3.97/4.00
Interfaces & Nanotechnology Track, Dean's List all semesters
Relevant Coursework: Micro/Nanotechnology, Thermodynamics and Statistical Mechanics, Dynamic Modeling and Control, Molecular Kinetics and Catalysis, Materials & Surface, Fluid Mixing for the Process Industries, Supramolecular Materials and Nanomedicine, Modeling and Design of Sustainable Chemical Processes, Transport Phenomena, Chemical and Biomolecular Separations

SKILLS

- **Technical:** polymer synthesis, thin film fabrication, electrical & ionic conductivity measurements, profilometry, DFT particle simulations, Creo Parametric CAD modeling, ANSYS CFX, BFDs and PFDs
- **Data analysis:** Python, Java, MATLAB Simulink, Microsoft Office, Rockfish supercomputer cluster

EXPERIENCE

Cell Stack Assembly Engineer Intern – HyAxiom, South Windsor, CT June 2025 – August 2025

- Optimized gasket adhesion process for a PEM Water Electrolyzer by systematically testing and bounding process variables, reducing adhesive application time by 30% and achieving a 100% success rate in a test 20-cell stack
- Designed standardized process flow charts and a formal process specification document, ensuring repeatability and scalability for future manufacturing
- Built and utilized a laser profilometer to analyze BPP vendor gland/channel profiles and quantify gasket-induced deformities, supporting data-driven vendor evaluation

Research Assistant – Katz Lab, Johns Hopkins University, MD August 2024 – May 2025
Synthesis and characterization of thermoelectric polymers for energy applications (PI: Dr. Howard Katz)

- Developed n-type ionic polymer systems by evaluating ion/polymer combinations using a solution-processed ion exchange technique to maximize energy conversion and storage capabilities
- Fabricated thin films via drop casting or spin coating, characterizing with four-point probe conductivity measurements, Seebeck coefficient analysis, and profilometry to assess performance

Undergraduate Researcher – ChemBE Department, Johns Hopkins University, MD August 2023 – December 2024
Machine learning applied to unit operations process control (PI: Dr. John Edison)

- Created self-learning adaptive reinforcement learning algorithms, using Monte Carlo, Temporal Difference, and actor-critic methods, to advance process control and compare performance with PID controllers
- Implemented Python-based data visualization for system performance analysis, resulting in the JHU Instructional Enhancement Grant to apply these programs to a physical Arduino-controlled thermal system

Research Intern – School of Computing, University of North Florida, FL May 2023 – August 2023
Climate-yield analysis utilizing machine learning (PI: Dr. Ayan Dutta)

- Created Python scripts to retrieve and preprocess 10 years of raw weekly MODIS satellite data from the NASA AppEARS platform, representing Florida as a 2D grid where each pixel correlated to geographical data, and integrated USDA yield data for analysis
- Visualized climate data, including vegetation indices and temperature patterns, in QGIS and normalized temporal and spatial features with Python
- Aimed to implement transfer learning with PyTorch's ResNet50 to analyze correlations between climate factors and Valencia orange yield

CO-CURRICULAR EXPERIENCE

Stopping Team Member – Johns Hopkins Chem-E-Car, *MD* August 2023 – Present

- Engineered an Arduino-controlled iodine clock reaction for precise vehicle stopping, collaborating with propulsion, chassis, and electronics teams to develop a chemically powered vehicle
- Optimized chemical ratios through experimentation, achieving an R^2 value of 0.99, and designed a contactless chemical mixing mechanism with a safety-compliant container for secure chemical transport
- Accomplished top finishes in AIChE Chem-E-Car competitions: 5th regionally and 19th nationally out of 51 teams

Math/SAT Tutor – Varsity Tutors, *Virtual* July 2022 – Present

- Instruct Pre-Calculus, AP Calculus AB/BC, Calculus I/II, AP Statistics, and SAT preparation to high school and college students through virtual sessions and tailored instruction
- Earned 5-star review for employing effective verbal and written communication, resulting in enhanced problem-solving and notable academic improvements for 20+ students throughout the school year

AWARDS AND HONORS

IB Diploma, National Merit Scholar, Benacquisto Scholar, AP Scholar with Distinction, Gold Seal of Biliteracy for Spanish