# Sathwika Chittluri

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## SUMMARY

Driven and detail-oriented Mechanical and Aerospace Engineering graduate student with hands-on research experience in **materials design**, **project development**, and **advanced simulation**. Skilled in leveraging expertise in **CAD, FEA**, and **MATLAB** to solve **real-world engineering** challenges in **battery technology**, **energy harvesting**, and **VR simulation** efficiency. Experienced in collaboration across disciplines, technical mentoring, and **manufacturing processes**. Demonstrated ability to enhance **research methods**, improve **student proficiency**, and deliver impactful technical solutions. Current **research projects**, including advancements in **battery materials** and performance, are ready to be presented at the upcoming **MS&T conference.**

## SKILLS

- **CAD Software**: CATIA, SolidWorks, Fusion 360, AutoCAD.
- **Simulation & Analysis:** ANSYS (thermal & structural FEA), finite element analysis, GD&T per ASME Y14.5 standard,
- **Mechanical Design:** 3D modeling, plastic, sheet metal, casting, electronics packaging, PCB enclosures
- **Engineering Principles:** Design for manufacturing (DFM), design for assembly (DFA), materials selection, thermal and structural design
- **Prototyping & Testing:** New product introduction (NPI), prototype builds, component fabrication, test planning.
- **Collaboration:** Cross-functional teamwork with electrical, firmware, manufacturing, and test engineers
- **Problem Solving & Continuous Improvement:** Identifying issues, determining root causes, and executing resolutions using Six Sigma, 5-Why, and similar techniques
- **Additional Skills**: Supplier communication, technical documentation, Ms Excel.

## EXPERIENCE

University at Buffalo, Dept of Nursing — Buffalo, NY
**Senior research aide** — August 2024 – May 2025

- Enhanced efficiency of **VR simulations** by optimizing **system configurations** for REACH VR research.
- Spearheaded **data collection** and **analysis**, leading to improved **research methodologies**.

University at Buffalo — Buffalo, NY
**Teaching Assistant** — August 2024 – December 2024

- Provided expert guidance on **CAD, AutoCAD, SolidWorks, ANSYS and Fusion 360**, improving student proficiency by **40%.**
- Mentored students on **industry-standard project development**, ensuring high-quality outputs.
- Developed **course materials** that streamlined the **learning process**, reducing project errors by **30%**.

University at Buffalo — Buffalo, NY
**Student Assistant** — August 2023 – December 2023

- **Graded assignments** and provided **structured feedback** that improved student comprehension.
- Assisted in preparing **instructional content**, leading to enhanced student engagement**.**

## PROJECTS

**Title: Inductive and capacitive behavior of carbon fiber, and the enabled nonstop discharge of a fiber assembly.(Link)**

- Investigated **high-frequency inductance and capacitance** of 7 µm **carbon fibers**, uncovering anomalously slow, non-exponential discharge cycles far beyond theoretical limits. Engineered an innovative **offset cycling** method to achieve continuous energy release in large fiber assemblies. Performed rigorous **data analysis** and **circuit modeling** in **MATLAB**.

**Title: Inductance-Dominant Impedance Discovered in Polyelectrolyte. (Link)**

- Characterized **PEO–$LiClO_4$·$3H_2O$** films using **LCR spectroscopy**, discovering dominant inductive impedance driven by complex ion transport mechanisms. Demonstrated frequency- and geometry-dependent scaling, advancing understanding of **ionic inductance** in **solid electrolytes**.

**Title: Potential Energy Harvester for Aviation**:

- Designed and implemented a **piezoelectric energy harvester**, improving aviation **power efficiency**.
- Utilized **MATLAB** for simulations, **ANSYS** for structural analysis, and **SolidWorks** for design**.**
- Findings contributed to ongoing research in energy harvesting applications

**Title: Magnetic Flame Test: Applications and Implications**:

- Conducted extensive research on **fire safety** and **industrial applications** of the Magnetic Flame Test.
- Optimized test methods using **MATLAB** and **ANSYS** enhancing efficiency and reliability.
- Proposed implementation strategies to industry stakeholders.

## EDUCATION

UNIVERSITY AT BUFFALO, THE STATE UNIVERSITY OF NEW YORK
**Master of Science, Mechanical and Aerospace engineering** — August 2023 – May2025
Conducting research in professor **Dr. Deborah Chung** Laboratory, focused on **Materials and Designing.**

SRM UNIVERSITY
**Bachelor of Technology: Aerospace Engineering** — July 2019 – May 2023
Specialized Coursework: Aerodynamics, Propulsion systems, Flight Dynamics, Aerospace Structures, and Control Systems