

PULIJALA MANASWI

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Skills

- Technical: Crystallography, Nano Science and Technology, Machine learning, Computational Fluid Dynamics.
 - Software: SolidWorks, CATIA, Origin Pro, ANSYS Workbench, Fluent, AutoCAD.
 - Programming: Arduino C, MATLAB, Python Programming.
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Education

Bachelor of Engineering in Mechanical Engineering | CGPA: 8.45/10
[Osmania University, Hyderabad, India](#)

Aug 2018 – Jun 2022

Research Experience

Project Associate | [CSIR – Indian Institute of Chemical Technology \(IICT\)](#)

Feb 2024 – Present

- Specializing in the **microencapsulation** of aromatic essential oils using various wall materials and emulsifiers. Employed homogenization to create emulsions, followed by **spray-drying** and **freeze-drying** to produce microencapsulated powders. Evaluated and compared the efficiencies of various wall materials for microencapsulation.
- Conducted **characterization** and analysis of samples using X-ray diffraction, zeta potential, particle size distribution, Fourier-transform infrared spectroscopy, and gas chromatography-mass spectrometry.

Graduate Trainee | [International Advanced Research Centre for Powder Metallurgy and New Materials](#)

Aug 2022 – Jan 2024

- Performed dispersion of **carbon nanotubes (CNTs)** with polar and amine-based solvents to formulate **ink** with varying viscosities for different applications ranging from **sensors** to water filtration using inkjet printing, filtration, **spin coating** and screen-printing methods.
 - Synthesized **Aluminium-doped Zinc Oxide (Al: ZnO)** for inkjet printing of transparent, conductive and flexible wearable electronic devices, and **Zinc Oxide (ZnO)** for antibacterial and antimicrobial activity of the medical dental implant using the Refluxing and Digestion method.
 - Conducted **characterization** and analysis of samples using X-ray diffraction, simple electron microscopy, zeta potential, UV spectroscopy, sedimentation analysis, surface tension, contact angle, and Fourier-transform infrared spectroscopy.
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Professional Experience

Intern | [Machine Learning](#) | [RINEX Technology](#) (*In Association with IIT Kharagpur Entrepreneurship Cell*)

Nov 2021 – Jan 2022

- Utilized machine learning algorithms such as Linear Regression, Logistic Regression and K-nearest neighbours, delivering solutions with accuracy levels ranging from **85% to 95%** for classification and predictive tasks across multiple projects.

Intern | [Additive Manufacturing](#) | [Brahmastra Aerospace Systems](#)

Sep 2021 – Oct 2021

- Applied principles of additive manufacturing in diverse projects, showcasing proficiency in designing and implementing **3D printing** methodologies for various materials.
- Utilized various software tools to convert design models into printable formats. Optimised design methodologies for easy and cost-efficient manufacture of parts while reducing cycle time.

Intern | [Medical Robotics](#) | [Centre for Healthcare Entrepreneurship \(CfHE\)](#) | [IIT Hyderabad](#)

Jul 2021 – Aug 2021

- Design and development of a specialized **3-degree-of-freedom robotic arm** tailored for radiological applications.
- Utilized **MATLAB** for comprehensive data analysis, conducting a detailed historical study of medical records to identify patterns and derive insights.
- Employed **ANSYS Workbench** to analyse and validate the structural integrity of the robotic arm design, ensuring its durability and reliability under operational stresses.

Intern | [Computational Fluid Dynamics](#) | [Elite Techno Groups](#)

Apr 2021 – May 2021

- Ran computational simulations in **ANSYS Workbench** and performed comparative analysis to examine and understand the behaviours of various spatial discretisation and time-stepping scheme and their effects on accuracy and stability.
 - Utilized the above schemes to perform a 1-dimensional flow analysis over an aerofoil, subsequently validating the results with the empirical data from wind tunnel experiments.
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Projects

Senior Year Design Project | [MVSR Engineering College, Hyderabad, India](#)

Oct 2021 – Jun 2022

- Engineered an Intelligent System to monitor the health of a sample brake disc using Artificial Intelligence.
- Utilized Non-Destructive Testing (NDT) like Liquid Penetrant Testing (LPT), Magnetic Particle Testing (MPT), and Ultrasonic testing (UT) to investigate faults and determine the health of new, old, and sample disc brakes. These NDT reports were used to validate the deep learning model.
- Utilized the images of the disc brakes of various life cycles to train and predict a CNN model using diverse datasets. Using the InceptionNet architecture, a training and prediction model was created that achieved accuracy spanning from **90% to 100%**.

Control Systems Engineer | [Team AstraioS](#) | [SAE Aero Design 2020, India](#)

Aug 2019 – Feb 2020

- Spearheaded the development of a specialized **test rig** to gather data on thrust profiles over a range of velocities using a **load cell**. This test rig helped to validate theoretical to actual flight characteristics for ideal propeller and motor size.
- Designed fuselage and wings while performing flow simulations over the nose, wings and endplates, optimizing aerodynamic performance and stability using Ansys fluent.

Design Engineer and Management Lead | [Team Ratchet](#) | [SAE BAJA 2020, India](#)

Apr 2019 – Mar 2020

- Involved in the design of the steering components, mainly the rack and pinion model for an All-Terrain Vehicle.
 - Created a test rig intended to record the angular displacement and acceleration data to validate tyre slip and g forces during cornering.
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