Avinash Nair

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Profile

Mechanical Engineering student with experience in aerospace R&D, CFD, and material simulations. Eager to contribute to defense and aerostructure projects through design and analysis roles.

Education

2021 – 2025
Kollam, India
B.Tech in Mechanical Engineering,
Amrita Vishwa Vidyapeetham (7.28 CGPA)

2020 – 2021
Kothamangalam, India
12th Standard, *Mar Elias HSS (89%)*

2018 – 2019
Kothamangalam, India
10th Standard, *Sobhana Public School (81%)*

Internship

Aug – Sep 2023
Bengaluru, India
CSIR-NAL, *Student Intern*
Operated with skilled professionals and hands-on experience in various aerospace technologies and testing protocols.

Conference

November-2023
A Review on Energy storage devices based on organic dyes
Conducted a comprehensive review of energy storage devices based on organic dyes for a conference proceeding, highlighting their potential as sustainable alternatives to conventional systems. Explored advancements in redox flow batteries and supercapacitors, focusing on molecular design, charge storage capacity, and performance. Addressed challenges such as long-term stability and scalability, emphasizing their promise for next-generation renewable energy solutions.

Aug 2024-July 2025
Study of Rectangular and Semi-Circular Serpentine Flow Channels in PEM Water Electrolyzer
Conducted CFD simulations using ANSYS Fluent to compare rectangular and semi-circular serpentine flow channels in a PEM water electrolyzer, analyzing their impact on pressure drop, velocity uniformity, and gas removal efficiency.

Design & Engineering Projects

Oct 2023 – Ongoing
Aerodynamical study on convergent channel using Open-Foam
Performed a computational fluid dynamics (CFD) study on the aerodynamic characteristics of a circular cylinder placed inside a converging channel, analyzing the effects of varying Reynolds numbers and convergence angles on flow behavior and stability.

Aug 2023 – Sep 2023

Studies on AZ91 Magnesium Alloys

There is a growing need for lighter yet stronger materials compared to aluminum in aerospace applications in the area of aerospace is a necessary requirement. It can be concluded that the AZ91 when casted with rare earth minerals can improve the material properties to a much great extend.

Oct 2022 – Dec 2022

Mini Belt Grinder

Constructed a mini belt grinder successfully, showcasing mechanical engineering and fabrication skills, integrating precision components for optimal performance and versatility within specified timelines.

May 2022 – Jun 2022

Trolley Wheel Fabrication

Designed and developed a multi-functional trolley with an aluminum base, stainless steel components, and PVC-rubber coated wheels to prevent corrosion. Integrated a cleaning mechanism using a rotating shaft with broom-like attachments, enabling it to collect waste and leaves for small-scale cleaning tasks. Successfully implemented to assist workers in maintaining the college surroundings.

Certificates

Introduction to Python Programming

Gtec Computer centre

Design and Analysis training

Industrus tech

Energy literacy Training

Energy Swaraj Foundation

Organization

Vidyut Promotion Team,	*Volunteer*	2023
Vidyut Artist Team,	*Volunteer*	2023
Bharat Scout and Guides,	*Volunteer*	2019 – 2021
School Band,	*Euphoniums*	2017 – 2019

Skills

CAD: SolidWorks, Fusion 360

Analysis: ANSYS, OpenFOAM

Programming: Python (Basics)

Manufacturing: Fabrication, Prototyping

Community Outreach Program

Prevent Protect Prepare -fire and safety, *Student Social Responsibility Project*

Did a safety awareness class for students under the guidance of a safety officer

Language

English Malayalam Hindi