N I L E S H N A R S I N H A D E S H P A N D E

Mechanical Engineering Undergraduate · Walchand College of Engineering, Sangli

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P R O F I L E

Motivated 3rd-year Mechanical Engineering undergraduate at Walchand College of Engineering with strong foundations in 3D CAD modeling (SolidWorks, AutoCAD), multiphysics analysis, and industrial manufacturing workflows. Experienced in executing technical engineering projects and selected as a Fellow in the exclusive Young CXO Fellowship, combining core technical design capabilities with executive leadership and operational problem-solving.

T E C H N I C A L S K I L L S

CAD / CAE / Analysis: SolidWorks, AutoCAD, Fusion 360, ANSYS, MATLAB/Simulink.

Programming & Tools: Python, Arduino IDE

E D U C A T I O N

B.Tech – Mechanical Engineering 2024 – 2028
Walchand College of Engineering, Sangli | Affiliated to Shivaji University, Kolhapur

H.S.C. (Science) 2022 – 2024
Vidyadham Science Junior College | Percentage: 81.17%

S.S.C. 2022
Dr. Desarda Public School, Chhatrapati Sambhajinagar | Percentage: 91.00%

P R O J E C T S / P O R T F O L I O

Automated Grain Size Measurement

- **Image Processing Workflow:** Developed an automated grain structure analysis tool using Python and OpenCV, implementing watershed segmentation and contour detection to isolate individual grains from microstructural microscope images.
- **Standard-Based Calculation:** Integrated standard planimetric and intercept methodologies (aligned with ASTM E112) to compute grain size numbers and intercept lengths automatically, reducing manual inspection time.
- **Technical Reporting:** Structured the automated pipeline to deliver repeatable, operator-independent quantitative results, compiling the findings into a formal technical evaluation report.

Parametric Design & Modelling of Turbomachinery Stator Vane | SolidWorks

- **3D Design & Modelling:** Developed a parametric 3D model of an aerodynamic aerofoil integrated with a rigid mounting base in SolidWorks, implementing custom loft profiles and root-fillet blend geometry to reduce stress concentration.
- **Computational Fluid Dynamics (CFD):** Conducted subsonic airflow simulations in ANSYS Fluent to

analyze pressure distribution, velocity contours, and boundary layer behavior, calculating lift (C_L) and drag (C_D) coefficients across varying angles of attack.

- **Finite Element Analysis (FEA):** Mapped aerodynamic pressure loads from CFD onto the blade surface in ANSYS Mechanical to evaluate Von Mises stress distribution, verifying structural integrity and a minimum Factor of Safety (FOS) under peak operating loads.

Decarburization Zone Measurement Ayodhyam Hackathon · 2025

- Investigated decarburization in steel — carbon loss from surfaces during heat treatment above 700°C and its direct impact on surface hardness, fatigue resistance, and wear life of components.
- Analysed chemical reactions ($C + O_2 \rightarrow CO_2$; $C + H_2O \rightarrow CO + H_2$) causing carbon loss, and examined how oxidising vs. reducing furnace atmospheres control decarburization severity.
- Applied ASTM E1077 standard methodology: prepared and etched steel cross-sections, examined under microscope, and identified the ferrite layer indicating carbon loss.

Line Following Robot Robotics Project

- Assembled and programmed an autonomous robot using IR sensors and a feedback control system, achieving consistent real-time path tracking across multiple test runs.
- Integrated sensor hardware with control logic, reducing path deviation errors through iterative tuning of the control algorithm.

INTERNSHIPS / EXPERIENCE

Prachi Forge Pvt. Ltd. June 2026

- Analyzed end-to-end hot forging and heat treatment operations for automotive components (steering shafts, yokes, clutch plates).
- Gained hands-on exposure to material sorting/color-coding (EN/SAE grades), band saw cutting, press forging (300T–600T), polymer quenching, shot blasting surface treatment, and NDT surface flaw inspection using Magnaflux under UV light

CERTIFICATIONS

SolidWorks Certified Training – 96 Hours 2025
MSME Technology Centre – IGTR

- Completed a 96-hour course covering Sketcher, Part Design, Surface Design, Assembly, and Drafting modules.
- Trained to create 3D models, design parts and assemblies, and generate engineering drawings.

POSITIONS OF RESPONSIBILITY

Volunteer — Aayodhyam, National Metallurgy and Materials Innovation Hackathon 2026

- Assisted in event coordination, participant guidance, and logistics to ensure smooth execution and schedule adherence.

Volunteer — Vertex National Event, M.E.S.A.–M.E.S.C. 2025 – 2026

- Managed coordination, logistics, and participant guidance ensuring the event ran on schedule.

Assistant Club Service Director — M.E.S.A.–M.E.S.C. 2024 – 2026

- Led planning and organisation of club activities and events, coordinating with team members for smooth execution.
- Managed club service tasks, building leadership and organisational capabilities.

Member — Google Developer Student Clubs (G.D.S.C.) 2024 – 2025

- Attended workshops and technical sessions on emerging technology topics; participated in collaborative learning activities.

ACHIEVEMENTS / AWARDS

Walchand CXO Fellowship Event — Selected to participate in an exclusive leadership fellowship with senior alumni and industry leaders.

SOFT SKILLS

Communication | Team Collaboration | Leadership | Time Management | Event Coordination | Problem Solving | Adaptability

HOBBIES

Robotics & Electronics Tinkering | CAD Modelling & 3D Design | Reading about Engineering Innovations | Attending Technical Workshops & Seminar