

Nishank Amin

585 967 9353 | amin.175@osu.edu

EDUCATION:

Doctor of Philosophy – Mechanical Engineering

Ohio State University, OH, USA (May 2025)

GPA – 3.8/4.0

Departmental Scholarship Award, MAE Department (2020-2021)

Master of Engineering - Mechanical Engineering

Rochester Institute of Technology, NY, USA (December 2019)

GPA - 4.0/4.0

Graduate Scholar Award in Mechanical Engineering (2019-2020)

Bachelor of Technology - Mechanical Engineering

Manipal Institute of Technology, India (May 2017)

GPA - 8.3/10

WORK EXPERIENCE:

Graduate Research Assistant - GEARLAB – The Ohio State University (August 2020 – Current)

- Created a new cross-axis gear load distribution software in MATLAB and FORTRAN which improved the load distribution prediction accuracy by 1100% while maintaining the compute time of previous models.
- Coordinated with industry stakeholders and sponsors to streamline the software development based on current needs of engineers.
- Presented research at IDETC-CIE 2023 Conference to 50 of the top minds in the Gear and Power Transmission field which was published in the conference proceedings.

Mechanical Engineering Design Intern – Motor Electromagnetics R&D – Tesla Inc. (May 2022 – August 2022)

- Developed Bearing Selection Optimization Module in MATLAB to improve design of gearboxes by selecting bearings that minimize power loss while meeting constraints such as bearing damage, size and limiting speed. Verified model in terms of accuracy of computation of bearing damage, life and power loss by comparison to Romax. This resulted in a 20% speedup in the gearbox design phase.
- Re-engineered multi-stage planetary geartrain and designed gears through macro and micro geometry modifications to reduce the backlash in rotary actuators using Romax and Windows LDP, leading to 65% improvement in robot limb precession.
- Coordinated the manufacturing of gears, assembled actuators and then validated the reduction in backlash through dyno testing using magnetic encoders.
- Researched and built a model to estimate the mechanical design factor of safety for an inverted lead screw-based actuator.
- Developed a cloud generation module for gearboxes to integrate into a multi-variable analytical tool in MATLAB. Performed studies to verify accuracy and precision based on pre-existing data.

Body Engineering Intern – Stamping ME – Tesla Inc. (March 2020 – August 2020)

- Created Master Schedule of all projects to aid in future resource planning.
- Created a Die home-line schedule which generated headcount requirements and assisted in Make/Buy studies. Eliminated the need for bank build and allowed for a shorter production shutdown window resulting in CapEx reduction of 26%.
- Initiated study for modification of part racks to store redesigned panels for a new program. Co-ordinated the plan to modify racks based on design changes, volume requirements and time availability.
- Modified and optimised the stamping capacity model and floor layout to accommodate new dies.
- Facilitated initial review of press-line decommission project by estimating floor space requirements. Helped in cost saving of \$2 million by creating storage space, delaying the outsource of obsolete dies and preventing the requirement of bank build for obsolete dies which were stored and shipped to service vendor.
- Created MATLAB script to calculate die-jumper codes for all future programs. Reduced process time by 97%.

Graduate Teaching Assistant - Rochester Institute of Technology (August 2019 - December 2019)

Tutoring, mentoring students as well as preparing and grading solutions for Powertrains System and Design course.

Engineering Intern - Porsche Centre Kuwait (June 2015- July 2015)

Completed training in three departments - Engines, Electrical and Diagnostics & Retrofitting. Gained practical experience on the working of components of high-performance cars.

Project Manager - Team Manipal Racing (BAJA SAE Team) (March 2016 - June 2017)

- Led a multi-disciplinary team of 25 undergraduate students that designed off-road vehicles to participate in SAE BAJA and Enduro Student India
- Created the project timeline for the season.
- Allocated financial and material resources while working with subsystem heads.
- Coordinated the information and process flow ensuring good communication and efficient knowledge transfer to new members of the team.
- Lead engineer of two technical projects of the team - Dual piston fixed brake calliper and Carbon Fiber Driveshaft.
- Validated overall car DFMEA in accordance with rules and requirements.

Brakes Subsystem Head - Team Manipal Racing (BAJA SAE Team) (March 2014 - March 2016)

- Design and release of components using SOLIDWORKS
- Performed finite element analysis in ANSYS ensuring weight, cost and quality goals are met.
- Selected materials to be used, procured them from suppliers and created BOMs for all parts.
- Conducted feasibility studies for new assemblies, supervised manufacturing of parts, confirmed dimensional accuracy and designed experiments to test and validate.

PUBLISHED RESEARCH –

- Amin, Nishank, and David Talbot. "Multi-Degree-of-Freedom Load Distribution Modeling of Cross-Axis Gearing." In International Design Engineering Technical Conferences and Computers and Information in Engineering Conference, vol. 87394, p. V011T11A003. American Society of Mechanical Engineers, 2023..
- Nayak, Suhas Yeshwant, Nishank Minil Amin, Srinivas Shenoy Heckadka, Vishal Shenoy, Ch Sravan Prakash, and Ruthvik Mabbu. "Design, fabrication and testing of carbon fiber reinforced epoxy drive shaft for all terrain vehicle using filament winding." In MATEC Web of Conferences, vol. 153, p. 04010. EDP Sciences, 2018.
- Heckadka, Srinivas Shenoy, Suhas Yeshwant Nayak, Shenoy P. Vishal, and Nishank Minil Amin. "Evaluation of Flexural and Compressive Strength of E Glass/Jute and E Glass/Banana Hybrid Epoxy Hollow Composite Shafts." In Key Engineering Materials, vol. 777, pp. 438-445. Trans Tech Publications, 2018.
- Nayak, Suhas Yeshwant, Srinivas Shenoy Heckadka, Nishank Minil Amin, Ramakrishna Vikas Sadanand, and Linto George Thomas. "Effect of Hybridization on the Mechanical Properties of Chopped Strand Mat/Pineapple Leaf Fibre Reinforced Polyester Composites." In MATEC Web of Conferences, vol. 153, p. 01006. EDP Sciences, 2018.

EXTRACURRICULARS –

President, MEGA (Mechanical, aerospace and nuclear Engineering, Graduate student Association)

- Lead team of fifteen graduate students in core committee of MEGA to conduct academic, professional and social development events for the graduate student community of the MAE department.
- Proposed and secured a 58% (YoY) budget increase in the first year followed by 66%(YoY) increase in the second year.
- Grew number of events by 35% (YoY) and 40%(YoY) with a concurrent 20% increase in participation each year.

SKILLS:

- Design software – Solidworks, PTC CREO, CATIA V5, AUTOCAD, Romax, Windows LDP.
- Analytical software – ANSYS, ABAQUS CAE.
- Programming Languages – MATLAB, C++.
- Certification – Lean Six Sigma Yellow Belt
- General skills – MS Office (Word, Excel, PowerPoint), Minitab, GD&T, RCA, DOE, SPC, Gage R&R, DFMEA.