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Onkar Salunkhe

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SUMMARY

I am a Masters student in Mechanical Engineering with experience in CAD/CAE in automobile domain and Software Product Development. I am an experienced professional with strong problem solving and analytical skills and effective communication skills. Actively seeking Internship / Co-op starting in Spring 2021. **Open for relocation. Currently on F1 VISA.**

EDUCATION

Michigan Technological University

Master of Science in Mechanical Engineering: Design | CAE | FEA | Machine Learning | GPA: 3.9/4.0

Houghton, Michigan

August 2019 - Expected August 2021

Vishwakarma Institute of Technology (VIT), Pune

Bachelor of Technology in Mechanical Engineering | CGPA: 9.09/10

Pune, India

July 2014 - May 2018

Honors (Equivalent to Minors): Automobile Engineering | CGPA: 9.40/10

July 2016 - May 2018

Industry Collaborated Courses: Ready Engineers Program by Tata Technologies Pvt. Ltd. | Steam Engineering by Forbes Marshall Pvt. Ltd.

Courses: Design for reliability, Finite Element Methods(FEM), Fluid Mechanics, Machine Learning, Strength of Materials, Vehicle dynamics.

RESEARCH EXPERIENCE

Michigan Technological University

Graduate Student Researcher: Mechanical Engineering Department

Houghton, Michigan

September 2019 - Present

- Advisor: [Dr. Gregory Odegard](#) and [Dr. Parisa Abadi](#)
- Leading a project team in Computational Solid Mechanics group.
- Research focused on implementing Finite Element Methods and analysis of FEA simulations.
- Currently working on a project in [Abadi lab](#) to design a biomedical actuator using FEA.

Indian Institute of Technology (IIT), Bombay

Research Intern: Mechanical Engineering Department | GPA: 10/10

Mumbai, India

January 2018 - June 2018

- Advisor: [Dr. Parag Tandaiya](#)
- Finite Element Analysis (FEA) of Bulk Metallic Glass (BMG) composites. | [Poster Presentation](#).
- Numerically investigated mechanical behavior of BMG through finite element simulations using ABAQUS software.
- 2 % strain plasticity enhancement is achieved with 5 % thickness of the copper coating on the monolithic BMG matrix.

EXPERIENCE

Dassault Systèmes

R&D Development Associate Engineer: CATIA

Pune, India

June 2018 - August 2019

- Assisted senior developers in debugging and developing code and migrating CAD from CATIA V4 to V5 and above levels.
- Constructed a 1-dimensional finite element solver in FORTRAN77 using matrix algebra.
- Promoted the source code changes for customers like Boeing and Meyer Werft a on CATIA V5 and 3DEXPERIENCE cloud infrastructure.
- Volunteered for the events of 3DEXPERIENCE Innovation Lab and headed the race-car track 3D printing team for the event.

John Deere, Pvt. Ltd.

Engineering Intern: Vehicle quality

Pune, India

June 2017 - July 2017

- Designed a lightweight tool to assemble a stiff spring in brake pedal considering the ergonomic considerations.
- Analysed the process performance and suggested corrective actions to improve the process quality for customers in Europe.
- Root cause analysis of steering wheel cut marks and suggested the process improvement on the assembly line.

PROJECTS

• Design and FEA of Automotive Differential case (CAE Durability)

September 2019 - Present

- Developed and optimized the design in CAD and 2D Drawing with tolerance is created for the production considering Design for Manufacturing Assembly (DFMA).
- Working on the FEA analysis on Optistruct with ductile iron material for desired fatigue life.
- Running Topology optimization for mass reduction using Altair Optistruct to generate innovative concept design.

• Design and FEA of bending Guidewires of Carbon Nanotubes using actuators for Biomedical applications

January 2020 - Present

- The objective is to use FEA to design a working actuator for specific guidewires and then make it in the lab using bio-compatible nanomaterials for application to Cardiovascular and Catheter treatments.
- Working on the FEA analysis of Piezoelectric materials on SIMULIA ABAQUS.
- The project will aim at developing bending actuators using a geometrical combination of electromechanical linear actuators.
- **Finite Element Implementation of ductile damage model: Application to automobile gear tooth** *September 2019 - December 2019*
 - Implemented Explicit/Dynamic simulation of ductile damage model using Abaqus 6.13.
 - Achieved the stability of Finite Element Simulation using mesh convergence study.
 - Predicted the failure at gear tooth root and compared with existing experimental results.
- **Reliability analysis of FEA simulations with Implementation of Machine Learning Method** *September 2019 - December 2019*
 - Performed a reliability analysis of FEA using FORM and Kriging (ML) method on MATLAB.
 - Automated the FEA simulations of 10 bar 2D planar truss on ABAQUS 6.13 using Python Macros. Latin Hypercube Sampling (LHS) is used for sampling.
 - Implemented Machine Learning method with adaptive sampling for Reliability-Based Design Optimization (RBDO).
- **Finite Element Modeling for Hyper-velocity impact of Aluminium sphere on a plate** *May 2018 - June 2018*
 - Simulated a hyper-velocity crash model of an aluminum sphere projecting on an aluminium plate at the velocity of 6.8 km/sec.
 - Performed Explicit/Dynamic simulation with Smoothed Particle Hydrodynamics (SPH) to model large deformations.
- **Design and prototyping of Automatic wiper mechanism** *July 2017 - December 2017*
 - The project aimed to design, simulate and manufacture the Automated wiper mechanism using an IR sensor.
 - IR sensor was used to detect rain or water on the windshield. The signal from IR sensor was given to Arduino and controlled the wiper motor through relays.
 - The project was sponsored by Product Design, Development and Innovation Laboratory of Dassault Systèmes.
- **Optimization of fluid flow for heating of water by Nichrome wire with variations in wire geometry** *January 2017 - June 2017*
 - Decided the Nichrome wire geometry to optimize the heat transfer in water for uniform temperature distribution.
 - Computational Fluid Dynamic(CFD) simulation was carried out using Solidworks to see the convection currents in the fluid.
 - The experimental results were carried out in Heat Transfer Lab of VIT, Pune, India.

PUBLICATION

Onkar Salunkhe, Neeraj Vijantkar, and Santosh Joshi, [Selection of tires based on cornering stiffness for formula student car](#) *International Journal for Research in Applied Science and Engineering Technology* Volume 5 Issue 6 September pp.2056-2063, 2017.

SCHOLASTIC ACHIEVEMENTS

- **5 Gold Medals:** Science and Mathematics Olympiad by Science Olympiad foundation as *school topper*.
- **Best student award:** by *District Council of India* for successive achievements in scholarship examinations.
- **Topper's list by State:** Scoring 100% in 10th standard in *Secondary School Certificate* among 1 million students.
- **Topper:** Among top 5 students in *Ready Engineers* program by Tata Technologies Pvt. Ltd.
- **3rd rank:** Online course on NPTEL Mechanics of Solid by *Indian Institute of Technology, Kanpur*.

LEADERSHIP AND EXTRACURRICULAR EXPERIENCE

- **President of Ekasutram** | VIT's Mathematics club | Student organisation | VIT Pune *April 2016 - May 2017*
 - Encouraged students to discuss engineering problems with pure mathematical ideas.
 - Delivered guest lectures to mathematics enthusiasts in different institutions.
- **Senior steering design and CAE Engineer** | Veloce Racing | Formula Student Team | VIT Pune *August 2015 - December 2016*
 - Managed the team of design and manufacturing of the steering sub-system for formula student vehicle.
 - Headed the CAE department in the team to perform FEA and CFD simulations of crucial parts of the vehicle.

SKILLS

- **Software:** ABAQUS, ANSYS, ADAMS, Arduino, AutoCAD, Autodesk FUSION 360, CATIA, COMSOL, Creo/ProE., Generative Design, HYPERMESH, Inventor, LS-DYNA, MS Office products, Optistruct, Radioss, Siemens NX, SolidWorks, 3DEXPERIENCE.
- **Programming Languages:** C++, FORTRAN 77, MATLAB, Mathematica, Python.

INTERESTS

- Badminton | Football | Music | Piano.