Onkar Salunkhe

2010F Woodmar Dr
Houghton, Michigan, 49931

osalunkh@mtu.edu   https://www.linkedin.com/in/onkarsalunkhe/

+1 (906) 370 7294

SUMMARY

I am a Masters student in Mechanical Engineering with experience in CAE in automobile domain and software development. I am an experienced professional with strong problem solving and analytical skills and effective communication skills. Actively seeking Internship / Co-op starting in Summer (May) 2020. **Open for relocation all over the USA. Currently on F1 VISA.**

EDUCATION

Michigan Technological University   Houghton, Michigan
*Master of Science in Mechanical Engineering: Design | FEA | Machine Learning | **GPA: 4.0/4.0***   *August 2019 - Expected August 2021*

Vishwakarma Institute of Technology (VIT), Pune   Pune, India
*Bachelor of Technology in Mechanical Engineering| **CGPA: 9.09/10***   *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   Houghton, Michigan
Graduate Student Researcher: Mechanical Engineering Department   *September 2019 - **Present***

- *Advisor: Dr. Gregory Odegard.*
- 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   Mumbai, India
*Research Intern: Mechanical Engineering Department| **GPA: 10/10***   *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   Pune, India
R&D Development Associate Engineer: CATIA   *June 2018 - August 2019*

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

John Deere, Pvt. Ltd.   Pune, India
Engineering Intern: Vehicle quality   *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 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.
  - Working on the FEA analysis of Piezoelectric materials on SIMULIA ABAQUS.
  - The project will aim at developing bending actuators using a geometrical combination of 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 impact 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 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 on Solidworks to see the convection currents in the fluid.
  - The experimental results were carried out in Heat Transfer Lab of VIT, Pune, India.

- **Mathematical modeling, design and simulation of Planimeter**   *July 2016 - December 2016*
  - Designed a planimeter which determines the area under the curve with 5 % tolerance.
  - The project aimed to understand the mathematical modeling behind the planimeter and simulate the design in SolidWorks to validate it.

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, CATIA, Creo/ProE, Autodesk FUSION 360, Generative Design, HYPERMESH, Inventor, MS Office products, Optistruct, Radioss, Siemens NX, SolidWorks, 3DEXPERIENCE.
- **Programming Languages**: C++, FORTRAN 77, MATLAB, Mathematica, Python.

INTERESTS

  - Badminton | Football | Music | Piano.