

Vaibhav Sunilkumar Agarwal

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Education

University of Illinois at Urbana-Champaign

Illinois, USA

MASTERS OF SCIENCE IN MECHANICAL ENGINEERING (GPA: 3.93/4)

Aug. 2019 - Exp. May 2021

Birla Institute of Technology and Science, Pilani

Rajasthan, India

BACHELORS OF ENGINEERING (HONS.) IN MECHANICAL ENGINEERING (CGPA: 9.74/10)

Jul. 2015 - Jul. 2019

Work Experiences

Tesla Motors Inc.

Palo Alto, USA

THERMAL ENGINEERING INTERN

May 2020 - Present

- Performed ANSYS Icepak CFD simulations for investigating and optimizing the thermal performance of electronic components associated with Autopilot system of Tesla cars.
- Designed thermal experiments and analyzed data for Autopilot components of Tesla cars.
- Collaborated with multi-disciplinary teams to better integrate every sub-system into the end-product, while meeting the tight schedule
- Worked closely with tier I and II suppliers for Design for manufacturing (DFM) reviews and manufacturing process design
- Earned valuable experience to work in a dynamic and fast-paced industry environment

University of Illinois at Urbana-Champaign

Champaign, USA

PULSE DE-ICING AND ELECTRONICS COOLING

Aug. 2019 - Present

- Optimized design for a commercial electronics cooling system in ANSYS ICEPAK
- Developed a MATLAB code to study thermomechanical behaviour for pulse defrosting application in heat exchangers and aircraft wing
- Working towards building an impedance based sensor for measurements of frost layer thickness inside a heat exchanger

Institute of Microstructure Technology, Karlsruhe Institute of Technology

Karlsruhe, Germany

SYNTHESIZING MULTISTABLE COMPLIANT MECHANISMS

May 2018 - Jul. 2018 & Jan. 2019 - Jun. 2019

- Investigated the design, fabrication, and optimization aspects of SMA multistable mechanisms for energy efficient design of micro-systems
- Simulated the bistable mechanism behaviour in commercial FEA software COMSOL, and successfully compared them with empirical results
- Gathered insight into micro-manufacturing techniques like lithography while developing working bi-stable and tri-stable mechanism

Indian Institute of Science

Bangalore, India

DESIGN OF INTRACRANIAL PRESSURE MEASUREMENT SENSOR

May 2017 - Jul. 2017

- Analyzed piezoresistive pressure sensors, to improve sensitivity, and reduce costs for medical applications
- Fabricated sensor costs around \$400 (around 90% cheaper than existing products) and is about 300% more sensitive

Projects

Three Axis Gyroscope with Force Amplification- MEMS

Aug. 2018 - Dec. 2018

- Formulated and studied coupled field analysis to simulate a three-axis vibratory MEMS gyroscope in ANSYS with 3D modeling in CATIA
- Employed force amplifying compliant mechanisms to increase the sensitivity of the gyroscope by approximately 42%

Vibration Analysis of a Rotating Timoshenko Beam

Jan. 2018 - May 2018

- Devised a MATLAB program with my 10 member team for non-linear Finite Element Analysis of a rotating windmill (Timoshenko Beam)
- Delegated the various subtopics of the complex problem to the members, coordinating among them to achieve final results

Ventilation system design for spread of diseases in hospital ward

Aug. 2017 - Dec. 2017

- Developed an effective ventilation system design to prevent the spread of infectious diseases in hospitals using ANSYS Fluent
- Optimized the building parameters to reduce disease spread by approximately 4 times without involving a lot of changes in the architecture

Seat Design For Safety of Automobile Passengers

Jul. 2016

- Proposed an improved seat design of automobiles to save passengers from sharp incoming objects to a 4 member expert panel
- Conferred with the coveted Avery Dennison spirit of invention award among 10 other students from the country, for developing the idea

Fuel Efficient Car Design

Feb 2016

- Collaborated with 24 students towards building a fuel efficient vehicle, wherein I designed the transmission system in SOLIDWORKS
- Awarded the perseverance award in the Shell Eco Marathon competition among 100 other teams from universities across Asia

Technical Skills

ABAQUS, AUTOCAD, COMSOL, SOLIDWORKS, MATLAB, ANSYS, CATIA, Creo, HVAC design, iOS development, MEMS design and micro-manufacturing, Technical design, Numerical procedures in CFD, Material Testing, Robotics, Industrial control systems.