# AJINKYA RAUT

3803 Wellborn road, Apt. 826, Bryan, TX 77801, USA | 979-721-0734 | ajinkyaraut@tamu.edu

EDUCATION TEXAS A&M UNIVERSITY, College Station, TX

// Aug'19 - Present

Ph.D. Candidate in Mechanical Engineering

• GPA: 3.80/4

INDIAN INSTITUTE OF TECHNOLOGY BOMBAY, Mumbai, India

// Jul'10 - Jun'15

B. Tech. and M. Tech. in Mechanical Engineering

• Major: Computer Integrated Manufacturing

• GPA: 7.95/10

RESEARCH EXPERIENCE

## SURFACE SCIENCE LABORATORY, Ph.D. Research

// Aug'19 - Present

Advisor: Dr. Hong Liang

## **Antimicrobial products**

- Making products with finer antimicrobial/antiviral properties by fusing different nanoparticles additives in biocompatible polymers
- Inventing versatile synthesis techniques to prepare the nanoparticles to enhance their features

## Membranes for water filtration

 Developing biocompatible membranes fused with nanoparticles and demonstrating their use in water filtration techniques

### Plant-based materials

- Qualitative analysis of plants that are subjected to several diverse growth environments
- Manufacturing multi-characteristics products that are made from plants and are 100% biodegradable GRADUATE RESEARCH ASSISTANT // Jun '20 – Aug '20
- J. Mike Walker '66 Department of Mechanical Engineering, Texas A&M University
- Fabricate the materials to replicate the superior qualities of nature-inspired materials by applying advanced manufacturing techniques

**RESEARCH ASSISTANT**, IIT Bombay

// Sep'18 - Mar'19

- Developed simulation models to validate various experimental results related to electric discharge machining (EDM) and nano textured surfaces by writing novel scripts on ABAQUS/ANSYS
- Responsible for mentoring 3 Ph.D. students on matters related to simulations and programming

## **ELECTRIC DISCHARGE BASED SURFACE TEXTURING**, Master's Thesis

// May'14 - Jun'15

Advisor: Dr. Suhas Joshi

- Developed a model on Simulia ABAQUS for single and multiple discharge EDM to find out the resulting crater depths and thus study the surface texture patterns
- Modelled and validated theoretical and experimental results for titanium alloy with different sets of input parameters like, current, voltage, temperature, cathode shape, etc.
- Application includes producing highly finished titanium surfaces used to check super hydrophobicity also biomedical procedures like orthopedic implants

**SKILLS** 

Electric discharge machining, atomic force microscopy, optical microscopy, 3d printing, proposal writing, machine learning, electrospinning, process simulation, membrane fabrication

**Software**: MATLAB, ANSYS, ABAQUS, SolidWorks, EES, CATIA **Programming Languages**: C++, FORTRAN, Python, HTML

WORK EXPERIENCE

## DASSAULT SYSTÈMES, Bengaluru, India

// Jun '15 - Sep '18

R&D Development Engineer, DELMIA

- Member of Mill Turn Technology team. Responsible for development and maintenance of code related to lathe machining in CATIA V5, DELMIA and 3DExperience Applications
- Over a span of 3 years, provided more than 15 new highlights and resolved over 150 customer issues HINDALCO INDUSTRIES LIMITED, Taloja, India // Dec '13

Material Recovery in Lithographic Sheet Production, Intern

- Investigated the root cause for material loss at each stage of production and suggested changes in processes to improve recovery by mapping wastages to their causes
- Comprehended the processes related to manufacturing of rolled aluminium products from its ore

## TEACHING EXPERIENCE

#### **GRADUATE TEACHING ASSISTANT**

// Aug '20 - Dec '20

College of Engineering, Texas A&M University

- Head Teaching assistant for Engineering Mechanics, a sophomore level course with 450 students
- Ensure smooth running of recitation classes, undertaking weekly help sessions for students, forming and grading class projects and examinations, and delegate duties to the graders and other TAs

## **GRADUATE TEACHING ASSISTANT**

// Jan '20 – May '20

College of Engineering, Texas A&M University

- Teaching assistant for Engineering Mechanics with 100 sophomore students enrolled
- Gaining experience in instructing students, finding and conveying innovative solution techniques along with forming, and grading assignments and examinations

### **TEACHING ASSISTANT**

// Jul '14 – Apr '15

Mechanical Engineering Department, IIT Bombay

- Teaching Assistant for Mechanical Workshop Practice Lab and Engineering Graphics and Drawing, two freshmen courses with 400 students enrolled
- Helped in training students on various projects, performed instructor and grader duties

# AWARDS AND RECOGNITIONS

• 2020 mechanical engineering graduate summer research grant

// May '20

• Passed the Ph.D. Qualifying Examination

// Jan '20

• Mill turn techno "Rookie" award, Dassault Systèmes

// Aug '16 // Jul '16

Delmia "Best newcomer" award, Dassault Systèmes

// Jul '10 – May '14

Merit-cum means scholarship, IIT Bombay
CBSE merit scholarship for professional studies-AIEEE

// Jul '10 – May '14

### **PUBLICATIONS**

- Invited feature article: Liang, H., Chen, Y., Jha, S., Raut, A., & Zhang, W. (2020). "Performance Characteristics of Lubricants in Electrical and Hybrid Vehicles: A Review of Current and Future Needs." Frontiers in Mechanical Engineering: 6, 82.
- Chen, Y., Jha, S., Raut, A., Parkinson, D. Y., Zhang, B., Elwany, A., & Liang, H. (2020). "Tomography of 3D-Printed Lattice Structured Aluminum-Silicon Alloy and Its Deformation." 3D Printing and Additive Manufacturing.
- Jithin, S., Raut, A., Bhandarkar, U. V., & Joshi, S. S. (2020). "Finite Element Model for Topography Prediction of Electrical Discharge Textured Surfaces Considering Multi-Discharge Phenomenon." International Journal of Mechanical Sciences: 105604
- Jithin, S., Raut, A., Bhandarkar, U. V., & Joshi, S. S. (2018). "Fe modeling for single spark in edm considering plasma flushing efficiency." Procedia Manufacturing 26: 617-628

# ACADEMIC COURSES

Corrosion Engineering, Surface Science, Ultra-Precision Machining, Advanced Manufacturing Processes, Design for Manufacturing, Computer Integrated Manufacturing, Rapid Product Development, Intelligent Manufacturing Systems