

# Radhika Patil

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## EDUCATION

**Stanford University**

*PhD Candidate, Mechanical Engineering*

## California, USA

2016-Present

**Indian Institute of Technology (IIT) Gandhinagar**

*Bachelor of Technology in Mechanical Engineering, Minor in Computer Science and Engineering*

**Gujarat, India**

2012–2016

- **Awards & Honors:** President's Gold Medal for highest cumulative GPA in entire graduating batch for 2016; Academic Excellence Scholarship for highest cumulative GPA in entire batch for 2013, 2014, 2015; Dean's list for all semesters.
- All India Rank 3079 in 560,000 students appearing for IIT Joint Entrance Exam 2012

## WORK EXPERIENCE

**Gu Lab**

Researcher

**Stanford University**

*June 2017 – Present*

- Conduct hands-on experimental research for mechanical characterization of nanoparticles and thin films.
- Plan experiments on nanoparticle synthesis, in-situ mechanical testing, process and analyze experimental data, model observations for underlying deformation mechanisms.

### Selected Projects and Publications:

- Kiani, M.T., Patil, R.P. and Gu, X.W., 2019. Dislocation surface nucleation in surfactant-passivated metallic nanocubes. *MRS Communications*, 9(3), pp.1029-1033.
- Patil, R.P., Doan, D., Aitken, Z.H., Chen, S., Kiani, M.T., Barr, C.M., Hattar, K., Zhang, Y.W. and Gu, X.W., 2020. Hardening in Au-Ag nanoboxes from stacking fault-dislocation interactions. *Nature Communications*, 11(1), pp.1-9.
- Yin, Y., Patil, R.P. Park, J.M., Gu, X.W., Cai, W. Modelling viscoelastic properties of optically clear adhesive polymeric thin films. (In Process, collaboration with Samsung Display)
- Patil, R.P., Gu, X.W., Strain rate dependent deformation of amorphous cobalt sulfide nanoboxes. (In Process)

## University of Washington

Summer Intern, *Boechler Research Group*

## Seattle, Washington

May 2015 – July 2015

- Conduct experiments to develop acoustic metamaterials for controlled wave propagation.
- Develop graphene transfer technique to introduce a thin graphene layer under Langmuir-Blodgett assembled PS microspheres

**Indian Institute of Technology (IIT) Bombay**

Summer Intern, **S.D. Sharma** Cardiovascular Lab, Aerospace Engineering

**Mumbai, India**

May 2014 – July 2014

- Computational fluid dynamic simulations using ANSYS to model cardiovascular blood flow at artery junctions pre and post Fontan open heart surgery procedure.

## PROJECTS

## Product Development, Management and Entrepreneurship

Stanford University

- BLOOMA – Last mile consumer package delivery system Sept 2016 - June 2017  
*Collaborations: SAP SE; University of Applied Sciences Mannheim, Germany*
  - Concept video: <https://www.youtube.com/watch?v=18f7GaQVFcU>
  - Full text: <https://searchworks.stanford.edu/view/kq227vw2007>  
A crowd-sourced package receiving system for individuals and communities making every attempt successful to optimize delivery system for couriers and e-commerce companies. Keeping in mind safety and security using a centrally controllable smart locking system, motion sensors, and live app notifications for safe access to houses for parcel delivery.
  - Developed from scratch through a user centered product development approach using design principles, user research and iterative product development strategies.
  - Prototyped and presented the concept at the MEDG Stanford design EXPerience Fair.
- FitNew – Fitness made social Fall 2019
  - Use design process and user research to developed MVP for social networking through event app

- Develop launch plan, monetization strategies, customer acquisition and lifetime costs, grabber and holder ecosystem, and 1-N expansion strategy for the product.
- Designing products for developing countries – healthcare **IIT Gandhinagar**  
*Collaboration: Caltech, USA* *Spring 2014*
  - Design process, user research, ideation, and prototyping products to improve health and efficiency of manual labor force operating at open construction sites in India

## **Data analysis and data mining**

**Stanford University**

*Working with data – tools and techniques*

*Spring 2020*

- Process, visualize and analyze crunchbase startup market data using tableau, python pandas and google spreadsheets
- Implement machine learning and data mining on user movie ratings dataset to predict missing values.

## **Machine Learning, Natural Language Processing and Deep Learning, Reinforcement Learning**

**Stanford University**

- Motion planning in unfamiliar environments

*Fall 2016*

- Neural networks based RL to implement Roomba-like path finding for simulated bot.

- Word vector representations using character n-grams

*Winter 2017*

- Develop word vector representations using component character n-grams as a strategy to model unfamiliar, compound and sandhi words.

- Markov decision process model for exploding kittens

*Fall 2018*

- Two player self-help RL to learning strategies for the game using neural networks and monte-carlo simulations

## **TECHNICAL SKILLS**

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- Design thinking, product management, accounting, machine learning
- Python, Matlab, client-side web programming in HTML, CSS, javascript, basic programming C, Java, SQL, R, nodejs
- Tableau, Autodesk Inventor
- Scanning electron microscopy, transmission electron microscopy, in-situ and ex-situ nanoindentations, rheometry, colloidal synthesis of nanoparticles, molecular dynamic simulations

## **CONFERENCES**

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- Minerals, Metals & Materials Society (TMS), San Diego California – Oral Presentation *2020*
- Society of Engineering Sciences (SES), St. Louis Missouri – Oral Presentation *2019*
- Stanford System-X Alliance, Stanford – Poster presentation *2019*
- Gordon Research Conference (GRC), Lewiston Maine – Poster presentation *2018*

## **ADDITIONAL**

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- Fluent in English, Hindi, Marathi, familiarity with Spanish and Mandarin
- Health freak loving food, gym, yoga and swimming, social dancer fond of waltz, polka, and swing; favorite pastime *keyboard, guitar, and painting*; Bollywood buff and music lover.
- Additional Select Honors and Scholarships
  - Department of Science and Technology Gov. of India, [KVPY](#) Fellowship *2011*
  - Department of Science and Technology Gov. of India, [INSPIRE](#) Fellowship *2012*
  - NCERT Gov. of India, [NTSE](#) Scholarship *2008*
- Teaching Assistantships
  - ME 241: Mechanical Behavior of Nanomaterials (MATSCI 241) **Stanford University**  
Theoretical mechanics for 0D, 1D and 2D nanomaterials, origin of stresses, deformation, elasticity, plasticity, and fracture in nanomaterials, *Fall 2018*
  - ES 101: Engineering Graphics **IIT Gandhinagar**  
Orthographic, isometric, auxiliary & section views, perspective projections, 3D modelling with Autodesk Inventor *Fall 2013*