

# Radhika Patil

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## SUMMARY

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- 4+ years research experience; collaborative projects in academia and industry
- Experience with user centric product design – user research, needfinding, ideation, prototyping and iterative product development through multiple projects
- Additional coursework knowledge in computer science; ML, NLP RL and Data

## EDUCATION

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### Stanford University

PhD, Mechanical Engineering

California, USA

Sept 2016- June 2021 (expected)

### Indian Institute of Technology (IIT) Gandhinagar

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

Gujarat, India

July 2012 – August 2016

- **Awards & Honors:** President's Gold Medal for graduating batch of 2016; Academic Excellence Scholarship and Dean's list award for 2013, 2014, 2015;

## RESEARCH

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### Stanford University

Graduate Research Assistant, [Gu Research Group](#)

Stanford, California

June 2017 – Present

- Colloidally synthesized solid and hollow single crystal metallic nanoboxes with smooth and rough surfaces. Experimentally tested them using in-situ electron microscopy compression to show the influence of geometry on structural deformation at the nanoscale. Demonstrated the effect of surface roughness as stress concentrators at the nanoscale.
- Developed a hybrid method using experimental nanoindentation and finite element modelling to computationally model viscoelastic soft polymeric adhesive thin films.

### Selected Projects and Publications:

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

### University of Washington

Summer Intern, [Boechler Research Group](#)

Seattle, Washington

May 2015 – July 2015

- Conducted experiments to develop acoustic metamaterials for controlled wave propagation.
- Investigated 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

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### Product Development, Management and Entrepreneurship

- *BLOOMA – Last mile consumer package delivery system*  
Collaborations: SAP SE; University of Applied Sciences Mannheim, Germany
  - Concept video: <https://youtu.be/18f7GaQVFcU>
  - Full text: <https://searchworks.stanford.edu/view/kq227vw2007>

Stanford University

Sept 2016 - June 2017

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 controlled smart locking system, motion sensors, and live app notifications for safe access to houses for parcel delivery.

- Worked in collaborative team of 3 at Stanford and 5 in Germany. Developed model from scratch using a user centered product development and 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
  - Used design process and user research to develop MVP for social networking through event app
  - Worked in a team of 5 to 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
  - Worked in collaborative team of 2 at IIT and 3 at Caltech over 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

Fall 2016

- Motion planning in unfamiliar environments
  - 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

- 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

## CONFERENCE PRESENTATIONS

- Minerals, Metals & Materials Society (TMS), San Diego California – Oral Presentation 2020
  - Deformation of Single crystal Au-Ag and Amorphous CoS nanoboxes
- Society of Engineering Sciences (SES), St. Louis Missouri – Oral Presentation 2019
  - Hardening in Au-Ag Nanoboxes from Stacking Fault-Dislocation Interactions
- Stanford System-X Alliance, Stanford – Poster presentation 2019
  - Mechanical Response to High Speed Impacts on Optically Clear Adhesive Thin Films
- Gordon Research Conference (GRC), Lewiston Maine – Poster presentation 2018
  - Mechanical Behavior of Ag Nanocubes with Surface Defects

## ADDITIONAL

- Yoga and swimming enthusiast; favorite pastime *keyboard* and *painting*.
- Additional Select Honors and Scholarships
  - Department of Science and Technology Gov. of India, [KVPY](#) Fellowship 2011
  - Selected for Department of Science and Technology Gov. of India, [INSPIRE](#) Fellowship 2012
  - NCERT Gov. of India, [NTSE](#) Scholarship 2008
- Teaching Assistantships
  - ME 348: Experimental Stress Analysis Stanford University  
Theory and applications of photoelasticity, strain sensors, and holographic interferometry Fall 2020
  - ME 241: Mechanical Behavior of Nanomaterials (MATSCI 241) Stanford University  
mechanics for 0D, 1D and 2D nanomaterials – origin of stresses and deformation, Fall 2018
  - ES 101: Engineering Graphics IIT Gandhinagar  
Projection and section views labs, perspective projections, 3D modelling with Autodesk Inventor Fall 2013