Radhika Patil

650-546-5291 | radhikap@stanford.edu | radhikap.com

SUMMARY

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

EDUCATION

Stanford University — **California, USA**
PhD, Mechanical Engineering — *Sept 2016- June 2021 (expected)*

Indian Institute of Technology (IIT) Gandhinagar — **Gujarat, India**
Bachelor of Technology in Mechanical Engineering, Minor in Computer Science and Engineering — *July 2012 – August 2016*

- **Awards & Honors:** President's Gold Medal for graduating batch of 2016; Academic Excellence Scholarship for highest cumulative GPA in entire batch for 2013, 2014, 2015; Dean's list for all semesters.

RESEARCH

Stanford University — **Stanford, California**
Graduate Research Assistant, Gu Research Group — *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 — **Seattle, Washington**
Summer Intern, Boechler Research Group — *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 — **Mumbai, India**
Summer Intern, S.D. Sharma Cardiovascular Lab, Aerospace Engineering — *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://youtu.be/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 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**

- *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

- 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
- Gordan 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*
  - 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*