Radhika Patil

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EDUCATION

Stanford University — **California, USA**
Doctor of Philosophy (PhD) in Mechanical Engineering — *Sept 2016- 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 and Dean's list award for 2013, 2014, 2015.

RESEARCH

Stanford University — **Stanford, California**
Graduate Research Assistant, Gu Research Group — *June 2017 – Present*

- Conducted research on 5+ collaborative research projects to develop fundamental understanding of nanomaterial deformation
- Discovered new insights for sub 20 nanometer mechanics and extremely soft adhesive polymer thin films by critically analyzing and circumventing limitations in the practical nanoscale measurement instruments.
- Recorded and processed new experimental data, analyzed and correlated it with past studies, and hypothesized mechanisms for observations. Collaborated with interdisciplinary teams to develop methods for real-life nanomaterial applications

Publications and Conferences

- **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)
- 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)
- 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

University of Washington — **Seattle, Washington**
Research Intern, Boechler Research Group — *May – July 2015*

- Researched multiple methods for the challenge of transferring delicate intact single atomic layer graphene to diverse substrates.

Indian Institute of Technology (IIT) Bombay — **Mumbai, India**
Research Intern, S.D. Sharma Cardiovascular Lab, Aerospace Engineering — *May – July 2014*

- Developed computational simulations for arterial blood flow model in designing next generation artificial heart valve implants.

PROJECTS

Product Development, Management and Entrepreneurship — **Stanford University**

- BLOOMA – Making every delivery attempt successful — *Sept 2016 - June 2017*
  Collaborations: SAP SE; University of Applied Sciences Mannheim, Germany (4 members); Stanford (3 members),
  - Conceptualized and designed solution for practical problem of inefficient last mile delivery of consumer packages. Strategized a business model and expansion plan for stakeholders and users. (Description)
  - Conducted 10+ rounds of iterative research, modeling, prototyping, feedback and improvisation over a duration of 9 months, with 2 rounds of pivotal change in design. Applied design thinking principles throughout the process.
  - Drew insights into human behavior and preferences through extensive research – literature, interviews and market competitor analysis at each stage. Identified key factors of influence through critical analysis of research data and

brainstormed solutions. Rapidly prototyped models to receive user feedback. Prototyped a final working model and demonstrated at MEDG Stanford design EXPErience Fair.

- FitNew – Fitness made social *Sept – Dec 2019*
  - Conducted user research using design thinking principles and designed minimum viable product (MVP) prototype for social networking event app
  - Developed a launch plan, monetization strategies, customer acquisition and lifetime costs, grabber and holder ecosystem, and 1-N expansion strategy for the product in a team of 5.

- Designing products for developing countries – healthcare **IIT Gandhinagar**
  Collaboration: California Institute of Technology (3 members), USA; IIT Gandhinagar (2 members), *Jan – Apr 2014*
  - Investigated practical healthcare issues of Indian labor force and designed product solution for it.

Working with data – tools and techniques – CS102 **Stanford University**
- Analyzed Crunchbase startup market data with Tableau, Python Pandas and Google Spreadsheets tools *Apr – June 2020*
- Secured second position on leaderboard for movie rating predictions class project.

Computer science graduate course projects – CS229, CS224N and CS238; (teams of 3) **Stanford University**
- *Neural network-based Reinforcement Learning for motion and path planning in unfamiliar environments* *Sept – Dec 2016*
- *Improving natural language processing word vector representations using character n-grams* *Jan – Mar 2017*
- *Self-help reinforcement learning with markov decision process model for two player exploding kittens game* *Sept – Dec 2018*

TECHNICAL SKILLS

- Research, Design thinking, product management, accounting, machine learning
- Python, Pandas, TensorFlow, Matlab, Tableau, Autodesk Inventor
- Client-side web programming in HTML, CSS, javascript (CS193C), basic programming familiarity C, Java, SQL, R, nodejs
- Scanning electron microscopy, transmission electron microscopy, in-situ and ex-situ nanoindentations, rheometry, colloidal synthesis of nanoparticles, molecular dynamic simulations

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**
  Orthographic, isometric, auxiliary, projection and section views labs, perspective projections, 3D modelling with Autodesk Inventor *Fall 2013*