

# Sayali Ravindra Kedari

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## SKILLS

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- **Programming:** Python (numpy, pandas, scipy, sympy, scikit-learn, tkinter, Pyro), C++, Julia, C, MATLAB
- **FEA:** Abaqus
- **CAD:** CATIA V5, SOLIDWORKS
- **OS:** Linux, Windows
- **Technologies:** Git

## EXPERIENCE

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### Graduate Researcher, Vemaganti Research Group, University of Cincinnati

2016 – present

- Developing probabilistic machine learning approaches for modeling and predicting the thermal and viscoelastic behavior of polymers.
- Developed optimal design of stress relaxation experiments to maximize information gained about the viscoelastic model parameters.
- Employed Bayesian framework using Python, PyTorch, and message passing interface (MPI) for calibration and validation of material models for soft biological tissues and polymers in applications such as crash-induced traumatic brain injury and soft robotics.
- Simulated the nonlinear material response based on hyperelastic models for solids under different loads using Python, MATLAB.
- Implemented the parallel finite difference method with domain decomposition to solve the partial differential equations using C++, MPI.

### Graduate Research Assistant, UC Simulation Center/Procter & Gamble

Aug 2018 – present

- Collaborating with interdisciplinary teams to drive and outline process design and optimization guidelines for P&G products.
- Performed finite element analysis (FEA) for optimizing and improving production turnovers of baby care products using Abaqus, Siemens Teamcenter, Solid Edge, Python, and Fortran.
- Employed physics-based predictive design and developed a digital twin to resolve complex flow, thermal and mechanical challenges faced for feminine and baby care products using Python and MATLAB.

### Instructor and Graduate Teaching Assistant, University of Cincinnati

Aug 2016 – Aug 2018

- Instructed large enrollment (60 students) lab sessions of Applied Computational Methods.
- Assisted in teaching the courses of Applied Computational Methods, Solid Mechanics, Finite Element Method (FEM).
- Supervised students for the class projects based on Ansys, Abaqus and MATLAB.

### Graduate Teaching Assistant, University of Kansas

Sept 2014 – May 2016

- Instructed large enrollment (70 students) lab sessions of Physics and Digital Computational Methods.
- Tutored the students with learning differences for courses of Physics and Intermediate Mathematics.

## EDUCATION

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### University of Cincinnati (UC), Cincinnati, Ohio, US

Doctor of Philosophy (PhD) candidate in Mechanical Engineering, GPA 3.76/4.0

Expected Mar 2022

Advisor : Prof. Kumar Vemaganti, PhD

Research focus : Computational mechanics, numerical analysis, uncertainty quantification, machine learning

### University of Kansas (KU), Lawrence, Kansas, US

Master of Science in Mechanical Engineering, GPA 3.84/4.0

2016

Thesis : Finite element analysis for heat conduction in solids and for deviatoric stress tensor in incompressible fluids

### University of Pune, Pune, India

Bachelor of Engineering in Mechanical Engineering, first class with distinction

2014

## CONFERENCES & WORKSHOPS

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- 16th U.S. National Congress on Computational Mechanics (USNCCM), 2021
- International HPC Summer School (IHPCSS), XSEDE, PRACE, R-CCS, and SciNet HPC Consortium, 2021
- Abaqus/Explicit - Advanced Topics, Dassault Systèmes, 2019
- NSF Cyber Carpentry: Data Life-Cycle Training, University of North Carolina at Chapel Hill, 2018

## AWARDS

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- CEAS Modeling & Simulation Fellowship, UC Simulation Center/Procter & Gamble, 2018 – present
- University Graduate Scholarship, University of Cincinnati, 2016 – present