

# Sayali Ravindra Kedari

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## EDUCATION

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

Doctor of philosophy (PhD) candidate in mechanical engineering, GPA 3.76/4.0

Expected Dec 2021

Advisor : Prof. Kumar Vemaganti, PhD

Research focus : Bayesian learning in computational rheology - applications to soft tissues and polymers

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

Master of science in mechanical engineering, GPA 3.84/4.0

2016

### University of Pune, Pune, India

Bachelor of engineering in mechanical engineering, first class with distinction

2014

## EXPERIENCE

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

2017 – present

- Developing hierarchical/multilevel Bayesian approaches for analysis of inverse problems in viscoelasticity to obtain optimal level of regularization in an automated manner, eliminate any subjectivity about the choice of noise parameters and predict the thermorheological behavior of polymers.
- Developing information-theoretic approaches (Fisher information, Kullback-Leibler divergence) to develop criteria for experimental design to maximize information gained about the parameters of linear and nonlinear rheological constitutive models, and address the question of finding optimal experimental parameters (strain, duration) for soft biological materials and polymers.
- Employing a parallel nested sampling-based Bayesian framework using message passing interface (MPI), Metropolis-within-Gibbs sampling and relevance vector machine (RVM) learning technique on the experiments performed under multiple modes of deformation, to establish a calibration and validation framework for the stochastic rheological constitutive models.

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

Aug 2018 – present

- Collaborating with cross-functional design teams to resolve complex flow, thermal and mechanical challenges faced at P&G (baby and female care units) for optimizing and improving production turnovers; Employing physics-based predictive-design-approach to drive and outline process design and optimization guidelines using commercial finite element analysis and programming tools.

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

Aug 2016 – Aug 2018

- Instructed the lab sessions of applied computational methods in the mechanical engineering department.
- Assisted professor in teaching the courses : applied computational methods, solid mechanics, finite element method (FEM) and kinematics and kinetics of machines, for graduate and undergraduate classes in the mechanical engineering department.

### Graduate Researcher, Computational Mechanics Laboratory, University of Kansas

May 2015 – Aug 2016

- Formulated the numerical simulation of elastic solids and viscous fluids using FEM based on the constitutive theories of heat vector and stress tensor; Validated the constitutive theories on the model problems using Fortran.

### Graduate Teaching Assistant, University of Kansas

Sept 2014 – May 2016

- Instructed the lab sessions of college physics-I in the physics and astronomy department and introduction to digital computational methods in mechanical engineering; Tutored the students with learning differences.

### Engineering Intern, Freudenberg Filtration Technologies, Pune, India

Aug 2013 – June 2014

- Computational fluid dynamics (CFD) analysis of filter assembly (senior design project): Minimized the pressure drop across the filter assembly and optimized the geometry of the weather hood and the transition section at the entry to the compressor, in collaboration with undergraduate students.

### Engineering Intern, Hindustan Aeronautics Limited, Bengaluru, India

Dec 2013

- Performed simulation of the wing tank refueling system and optimized the pressurization and transfer system of military aircraft, in collaboration with undergraduate students.

## SKILLS

- **Programming/Scripting languages:** Python, Julia, C++, C, MATLAB, LaTeX
- **FEA/CFD Packages:** Abaqus
- **CAD/CAE:** CATIA V5, PTC Creo, Autodesk AutoCAD, SOLIDWORKS
- **HPC:** MPI, OpenMP
- **OS:** Linux, Windows
- **Technologies:** Github, Docker, Jetstream

## HONORS & ACHIEVEMENTS

- **Abaqus/Explicit - Advanced Topics Training**, Dassault Systèmes, 2019
- **CEAS Modeling & Simulation Fellowship**, UC Simulation Center/Procter & Gamble, 2018 – present
- **NSF Cyber Carpentry: Data Life-Cycle Training**, University of North Carolina at Chapel Hill, 2018
- **University Graduate Scholarship**, University of Cincinnati, 2016 – present
- **University Graduate Scholarship**, Government of Maharashtra, India, 2014 – 2015