

# Dr. Sagar Hosangadi Prutvi

Research Engineer | Data Scientist

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## About me

I hold a Ph.D., from the **Indian Institute of Technology – Bombay**. My exploratory research is focused on integrating **Triboelectric devices for Industry 4.0** applications, which led to the development of self-powering triboelectric vibration sensors for condition and health monitoring of rotary machinery. I have published **8 peer-reviewed journal articles** and **6 conference papers** across multiple fields.

As a seasoned **Research Engineer** and a **Data Scientist**, I wish to leverage my diverse skills to solve complex multi-physics problems to create an impactful success story.

## Expertise

- Research and Development
  - Tribo-electric devices
  - condition monitoring and prognostics
  - Electro-mechanical devices
  - Vibration sensors
- Mechanical Engineering
  - 3D modeling
  - Structural Analysis & CFD
  - Design and optimization
- Data Science
  - Machine learning & statistical models
  - Deep learning models
  - Natural Language Processing
  - Anomaly, Fault & Failure prediction/detection

## EDUCATION

### Post-Doctoral Researcher

2024-present

*universität Freiburg (LivMatS cluster of Excellence)*

Project: Frequency tunable triboelectric energy harvester

- Building a **machine learning-based system** that uses data from the force sensor (in real time) to implement surface parallelization of a TENG device to improve power output.
- Developed a **Python-driven command center** to automate data collection from multiple measurement devices, reducing manual effort and standardizing data collection protocols through a unified system.

### Doctorate of Philosophy

2016-2022

*Indian Institute of Technology Bombay (Grade: 8.6 CGPA)*

Thesis: Triboelectric effect driven self-powered vibration sensors and wind energy harvesting device for enabling industry 4.0.

**TATA fellowship awardee**

### M.Tech - Nanotechnology

2013-2015

*National Institute of Technology Karnataka, Surathkal (Grade: 9.5 CGPA)*

Thesis: Design and analysis of 1D silicon photonic crystal-based strain and mass sensor.

**Collaborative research with IISc Bengaluru**

### B.E. - Mechanical Engineering

2007-2011

*Visvesvaraya Technological University (Grade: 71.8%)*

(Dr. Ambedkar Institute of Technology)

Thesis: Design and development of automated bike washer unit.

## WORK EXPERIENCE (7 years)

### Data & Analytics Specialist

Dec, 2023 - Apr, 2024

*Swiss Re*

- Designed and developed an end-to-end client ranking solution to automate and simplify the auditing process.

### Data Scientist

June, 2021-Aug, 2023

*Halliburton*

- Managed a comprehensive proof-of-concept initiative & built a resilient ML model that could predict the application runtime with >95% confidence.

### Senior Structural Analyst

June, 2019 - June, 2021

*Gorgonian Technologies*

- Here, I was actively involved in research and development of small-scale wind turbines. My major responsibilities were to perform CFD analysis and check the feasibility of the designer's ideas.

### Mechanical engineer

Feb, 2019 - Feb, 2020

*Aumeesh Technologies*

- Here, I worked on a KAFO (leg prosthetic) product to optimize its mechanical systems based on GAIT analysis.

### Mechanical (CAD) Engineer

Sept, 2011 - Aug, 2013

*HCL technologies*

- Provided CAD support for semiconductor domain clients. I specialized in harness routing path optimization, and creating its flat-board drawings for manufacturing.

Soft Skills and Strengths

Creativity

Curiosity

Flexibility

Self Confidence

Ability to Plan and Organize

Autonomy

Adaptability

Eye for Details

Problem Solving

Team Working

Love Learning New Things

Leadership

Good Communication


Managing Information

Diplomacy

Good Listener


Patience

BioData




Date of Birth

3<sup>rd</sup> July 1989




Gender

Male



Marital status

Married



Current address

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Permanent address

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7<sup>th</sup> main Nandakumar layout,  
Ramanjaneya Nagara, Arehalli,  
Bengaluru - 560061, India  
Ph: (+91) 8660770698



Nationality

Indian




Languages

German - A1.1  
Kannada - Native  
English - Professional fluent  
Hindi - Conversational  
Telugu - Conversational


SELECTED PUBLICATIONS

Journal Article

Total 8

Self powering vibration sensor based on a cantilever system with a single electrode mode triboelectric nanogenerator, Sagar Hosangadi Prutvi, Mallikarjuna Korrapati, and Dipti Gupta, *Measurement Science and Technology* 33 (7), 075115 (2022),  10.1088/1361-6501/ac5b2b

Triboelectric effect based self-powered compact vibration sensor for predictive maintenance of industrial machineries, Hosangadi Prutvi Sagar, Sunil Meti, Udaya K Bhat, and Dipti Gupta\*, *Measurement Science and Technology* 32 (9), 095119 (2021),  10.1088/1361-6501/abe6d2

Transient dynamic distributed strain sensing using photonic crystal waveguides, Hosangadi Prutvi Sagar, Vignesh Mahalingam, Debiprosad Roy Mahapatra\*, Gopalkrishna Hegde, Sathyanarayana Hanagud, and Mohammad Rizwanur Rahman, *Applied Optics* 56 (28), 7877-7885 (2017),  10.1364/AO.56.007877

Conference & symposiums

Total 6

Graphene Integrated Waveguide for Molecular Sensing, Sagar H P, and MR Rahman,, *International Engineering Symposium (IES) - 2015, Kumamoto University, Kumamoto, Japan*

SKILLS

Research & Development

Matlab | Rapid Prototyping | SEM & AFM | Thermal Evaporator | Plasma ashers | Screen printing | wet bench experiments | Instrumentations | Analog circuits | Arduino

Simulation & Analysis

COMSOL Multiphysics | Mathematica | Ansys | Ansa | LS-Dyna | LT-spice | Hypermesh | LAMMPS


3D modeling

Creo | ProE | Autocad | Solidworks | Catia


Data Science

Python | AWS (Sagemaker and Canvas) | Orange | TensorFlow | Keras | Pandas | Seaborn | Numpy

CERTIFICATES



- NLP - Natural Language Processing with Python (2022)
- Python for Time Series Data Analysis (2022)
- Python for Data Science and Machine Learning bootcamp (2021)



- Generative AI fundamentals (2023)