

Sanket Thakre, PhD

📍 Bengaluru, India ✉ Google mail ☎ +91 9673701493 in Sanket Thakre

Motivation

A seasoned R&D professional in the area of industrial digital transformation. Experienced in the areas of manufacturing operations, Industrial Internet of Things (IIoT), digital twin, product design and development, computational materials engineering, high fidelity simulations, data science and machine learning

I highly aspire to contribute to the field of technology-oriented advanced solution design and deployment for cyber-physical system applications under the domain of materials science

Education

Indian Institute of Technology Madras, Chennai, Tamil Nadu Jul 2018 – Oct 2022
M.S. & Ph.D. in Metallurgical and Materials Engineering with specialization in Materials Informatics

- GPA: 8.55/10

Visvesvaraya National Institute of Technology, Nagpur, Maharashtra Jul 2011 – Jun 2015
B.Tech in Metallurgical and Materials Engineering

- GPA: 8.03/10

Academic Research

Doctoral candidate (Prime Minister's Research Fellow) Chennai, IN
Indian Institute of Technology, Madras, Tamil Nadu India. Jul 2018 – Oct 2022

- **Thesis Title: Materials informatics enabled quantification of structure-property correlations: Application to DP steels**
- Associated with [Laboratory for Mechanics of Microstructures](#) 🔗 at IIT Madras to study the impact of microstructure design and its effect on properties and performance
- Worked with [Prof. Anand Krishna Kanjarla](#) 🔗 & developed a statistical and regression-based digital framework for predicting damage initiation in Dual Phase (DP) steels using applied machine learning with an accuracy of 97% to aid accelerated materials development

Professional Experience

AI Solutions Specialist - Digital Twin Bengaluru, IN
Bosch Digital twin Industries Oct 2022 – Present

- Responsible for customer solutioning and AI ecosystem development for [Bosch Digital Twin Industries](#) 🔗 (Startup incubated with Bosch Business Innovations)
- Achieved digital transformation for 5+ customers through technical consultation and efficient digital twin solution construct design for their industrial turbomachines
- Led a team of 6 data scientists & integrated concepts of state estimation, hybrid modelling and synthetic data generation into the scalable templates of the digital twin

Assistant Manager - R&D Kirloskarwadi, IN
Kirloskar Brothers Limited Aug 2015 – Jul 2018

- Associated with the [Product Design and Development \(PDD\)](#) 🔗 team and responsible for the design of large vertical turbine pumps and horizontal split case pumps
- Assisted a steering committee in providing strategic inputs for process improvement under four central pillars: Cost, Technology, Process, and Delivery
- Achieved 99% execution of capital expenditure projects worth 200 Mn to ensure smooth and productive business operations

Journal Publications

- **Thakre S**, Karan V and Kanjarla A K, **Quantification of similarity and physical awareness of microstructures generated via Generative Models**, *Computational Materials Science* [🔗](#), (2023)
- **Thakre S** and Kanjarla A K, **Reduced order damage assessment model for dual phase steels**, *Integrating Materials and Manufacturing Innovation* [🔗](#), (2022)
- Raj M, **Thakre S**, Annabattula R K and Kanjarla A K, **Estimation of Local Strain Fields in Two-Phase Elastic Composite Materials Using UNet-Based Deep Learning**, *Integrating Materials and Manufacturing Innovation* [🔗](#), (2021)
- **Thakre S**, Harshith V, and Kanjarla A K, **Intrinsic dimensionality of microstructure data**, *Integrating Materials and Manufacturing Innovation* [🔗](#), (2021)

Patents

- Saad A, **Thakre S**, **A control unit for generating a synthetic data for an industrial machine**, Patent filed, (2024)

Conference Presentations

- Krishna M, **Thakre S**, **Synthetic fault generation with diffusion models for predictive maintenance**, *Bosch FITFest'25 (Future, Innovation, Technology)*, Hyderabad, India, (2025)

Projects

Exploration of GenAI for Industrial synthetic data generation, IIT Roorkee (Jul 2024 - Ongoing)

- Collaborative work with IIT Roorkee and Bosch Digital Twin Industries to expand the generative AI segment
- Decoding the latent space of the generative AI model to synthesize faulty vibration signals, with given healthy vibration signals

Research & Innovation management intern, Invest India (Oct 2021 - Mar 2022)

- Research internship with Invest India - PMSTIAC Secretariat, Delhi. Focussed on developing strategies for R&D facilitation and innovation management for the Office of PSA's nine national missions under PM-STIAC
- Developed research-based content on areas like quantum computing, cryptography, low carbon economy etc. to support collaborative proposals. [Link to blog](#) [🔗](#)

International hackathon for windfarm optimization, Shell (Sep 2020 - Oct 2020)

- Analysed wind patterns, wake effects, wind turbine characteristics, geometrical considerations to formulate an objective function to maximize energy output from a windfarm
- Windfarm layout optimization was achieved through a systemic constrained optimization using a pattern search algorithm for 50 wind turbines

i Mission (New Product Development), Kirloskar Brothers Limited (Apr 2017 - Jul 2018)

- Designed a new axial split case pump under the 'i-mission' forum, with focus on a new product in industrial cooling system segment
- Noteworthy outcomes from the developed product include 10% weight reduction, 15 mins assembly time reduction, incorporation of state of the art self-lubricating composite bushes, and development of dynamic pump monitoring system

Skills

Essential: Interpersonal skills • Analytical thinking • Leadership • Decision making • Strategy • Cross-functional team management

Technical: Product design and development • Materials Informatics • Data Science • Machine learning • Statistical modeling • Hybrid modeling • Synthetic data generation • Vibration signal processing • IIoT • Systematic Research • Technical writing.

Technologies: Python • C • SAP • ABAQUS • MATLAB • Fortran • MS Office • LATEX

Awards and Honors

- **Best presentation award** in Future of Factories category at Bosch FITFest'25 in Jun 2025
- Secured **Bosch Stellar Award** for recognition on exemplary performance in Jan 2025
- Recognition on acquiring first Digital Twin customer in **Australia & New Zealand (ANZ) region for Metals and Mining Sector**
- Completed course on '**Vibration Analysis Category I & II**' by Mobius Insitute in Nov 2023
- Structured & delivered a course on '**Introduction to materials informatics**' at VNIT, Nagpur in Jan 2022- Apr 2022
- Secured **bronze category** (22nd out of 1529 teams) in shell.ai international hackathon in Nov 2020
- Secured **Prime Minister's Research Fellowship** awarded by Ministry of Education in May 2018

Travel Grants

Short Term Research Deputation, Bosch, Germany (Jun 2024 - Dec 2024)

- Reduced Order Model (ROM) framework development for turbo-machines for EU & ME customers
- Technical consultation on implementation on digital twins for energy & geothermal industry

Invited speaker

- Invited talk on '**Digital twins for Industries**' at *Indian Institute of Technology Indore, Drishti CPS Foundation* on 24 Apr 2025

References

Dr. Anand Kanjarla

Associate Professor, IIT Madras, Chennai

kanjarla@iitm.ac.in, +91 9444031476

Dr. Jagannath Rao Marati

Lead, Simulation and Immersive Experience, Bosch, Germany

jmarati@gmail.com, +49 1731554352