

ASHWIN NANDAGIRI

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EDUCATION

National Institute of Technology Karnataka, Surathkal, India 2008 - 2012
Bachelor of Technology Overall GPA: 9.03/10
Mechanical Engineering

IIT Bombay (India) and Monash University (Australia) 2014 - 2021
Doctor of Philosophy Coursework GPA: 9.78/10
Thesis: Beating Patterns and Energetics of Sperm Flagella

CORE SKILLS

Areas: Analysis of experimental imaging data, reduced-order modelling using Proper Orthogonal Decomposition (POD), elasto-hydrodynamics of slender filaments at low Reynolds numbers, method of regularized Stokeslets.

Programming languages: MATLAB, MATLAB Image Processing Toolbox, C++, Python, Julia.

EXPERIENCE

National Institute of Technology Rourkela (NITRkl) July 2024 - present
Assistant Professor, Department of Mechanical Engineering

National Institute of Technology Karnataka (NITK), Surathkal March 2024 - July 2024
Project Manager

- Research on the applications of data analysis techniques in the Centre for System Design at NITK, Surathkal.

Sri Shasha Prayathi Technologies, India January 2024 - July 2024
Senior Manager

- Research on target tracking using radars and associated data analysis techniques.

Department of Mechanical Engineering, National Institute of Technology Karnataka (NITK), Surathkal July 2022 - December 2023
Faculty (Temporary)

- Undergraduate courses taught: Basic Engineering Thermodynamics, Engineering Graphics, Elements of Mechanical Engineering, Workshop Practice, Metrology and CAD Lab

IITB-Monash Research Academy (a dual-badged joint PhD program between IIT Bombay (India) and Monash University (Australia)) July 2014 - July 2021
Graduate Research

- *PhD coursework:* Advanced Transport Phenomena, Computational Flow Modelling, Computational Methods in Chemical Engineering, Advanced Thermodynamics, Modelling Chemical and Biological Patterns, Colloid and Interfacial Engineering, Introduction to Interfacial Waves, Cell Mechanics and Mechanobiology (CGPA: 9.78/10.00, nominated for the *Oskar* award for highest CGPA at the IITB-Monash Research Academy).
- *Period of stay at Monash University, Australia:* January 2016 - July 2017

- *Teaching Assistant for the following undergraduate/graduate courses:* Solid Mechanics, Mathematical Methods for Chemical Engineers, Modelling of Chemical and Biological Patterns, Transport Phenomena (at IIT Bombay, India), Fluid Mechanics (at Monash University, Australia).

Engineers India Limited (a leading EPC company in the petrochemicals sector) July 2012 - October 2013

Management Trainee/Mechanical Engineer

- Trainee (New Delhi) and subsequently Engineer in the Construction division posted at MRPL (Mangalore Refineries and Petrochemicals Limited), India.

National Institute of Technology Karnataka, Surathkal

July 2008 - May 2012

Undergraduate Study

- Majored in Mechanical Engineering with a CGPA of 9.03/10.00, undergraduate thesis: Experiential learning modules for machine vibration and dynamics.
- Indian Academy of Sciences (IAS) Summer Research Fellow at the Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore, India.
- Member of the undergraduate Unmanned Aerial Vehicle team at NITK, Surathkal.
- Member of the Hobby and Flying Club at NITK, Surathkal.
- Summer intern at Coral Digital Technologies, Bengaluru in Embedded Systems.

PUBLICATIONS

1. *Flagellar energetics from high-resolution imaging of beating patterns in tethered mouse sperm;* **Ashwin Nandagiri**, Avinash S. Gaikwad, David Potter, Reza Nosrati, Julio Soria, Moira K. O'Bryan, Sameer Jadhav, and Ranganathan Prabhakar; **eLife** **2021;10:e62524**(I.F.: 8.14)
2. *CRISPs function to boost sperm power output and motility;* Avinash S. Gaikwad, **Ashwin Nandagiri**, David L. Potter, Reza Nosrati, Anne E. O'Connor, Sameer Jadhav, Julio Soria, Ranganathan Prabhakar, and Moira K. O'Bryan. **Frontiers in Cell and Developmental Biology** **9 (2021)**.(I.F.: 6.38)
3. *Unraveling the Kinematics of Sperm Motion by Reconstructing the Flagellar Wave Motion in 3D;* Sushant Powar, Farin Yazdan Parast, **Ashwin Nandagiri**, Avinash S. Gaikwad, David L. Potter, Moira K. O'Bryan, Ranganathan Prabhakar, Julio Soria, and Reza Nosrati. **Small Methods** **6, no. 3 (2022): 2101089**.(I.F.:14.18)
4. Sai Prakash A, Vandana G S, **Ashwin Nandagiri**, Pathipati Srihari, Bethi Pardha Saradhi, Linga Reddy C. "Cyber Attacking Active FMCW Radar Signal AoA Estimation Using Passive FMCW Radar for ADAS Applications" 2024 IEEE 13th International Conference on Communication Systems and Network Technologies (CSNT), April 06-07,2024 (Accepted for Publication)
5. Vishnu Prasad, Vandana G S, **Ashwin Nandagiri**, Pathipati Srihari, Bethi Pardha Saradhi, Linga Reddy C. "Automotive Radar Signal Authentication via Correlation and Power Spectral Density" 2024 IEEE 13th International Conference on Communication Systems and Network Technologies (CSNT), April 06-07,2024 (Accepted for Publication)
6. Dayananda B N, Neetesh S., Achala G., **Ashwin Nandagiri**, Pathipati Srihari, Bethi Pardha Saradhi, Linga Reddy C. "Depth Information Fusion Using Radar-LiDAR-Camera Experimental Setup for ADAS Applications" 2024 IEEE 13th International Conference on Communication Systems and Network Technologies (CSNT), April 06-07,2024 (Accepted for Publication)
7. Paramananda Jena, Ashutosh Singh, Vandana G S, **Ashwin Nandagiri**, Pathipati Srihari, Bethi Pardha Saradhi, Linga Reddy C. "MIMO-SAR Image Reconstruction Experiment Using Back-Projection Algorithm With Automotive Radar for ADAS Applications" 2024 IEEE 13th International Conference

CONFERENCE TALKS

1. Ranganathan Prabhakar , **Ashwin Nandagiri** , Sameer Jadhav. What causes periodic beating in sperm flagella: synchronized internal forcing or fluid-structure interaction ?, 69th Annual Meeting of the APS Division of Fluid Dynamics, Portland, USA, 2016
2. **Ashwin Nandagiri**, Avinash Gaikwad, Moira O'Bryan, Julio Soria, Ranganathan Prabhakar, and Sameer Jadhav. Proper Orthogonal Decomposition of flagellar motion in sperm to reconstruct and compare typical beat patterns., 71st Annual Meeting of the APS Division of Fluid Dynamics, Atlanta, USA, 2018
3. **Ashwin Nandagiri**, Avinash Gaikwad, David Potter, Julio Soria, Moira O'Bryan, Sameer Jadhav, and Ranganathan Prabhakar. Estimation of internal power distribution in sperm flagella from measurements of beat patterns., 72nd Annual Meeting of the APS Division of Fluid Dynamics, Seattle, USA, 2019
4. **Ashwin Nandagiri**, Avinash Gaikwad, David Potter, Reza Nosrati, Julio Soria, Moira O'Bryan, Sameer Jadhav, and Ranganathan Prabhakar. The rheology of a flagellum., 18th International Congress of Rheology (2020), Rio De Janeiro, Brazil.
5. **Ashwin Nandagiri**, Avinash Gaikwad, David Potter, Reza Nosrati, Julio Soria, Moira O'Bryan, Sameer Jadhav, and Ranganathan Prabhakar. The mechanical energetics of flagella., Complex Fluids (2020), Indian Society of Rheology and IIT Bombay, India.
6. Avinash Gaikwad, **Ashwin Nandagiri**, David Potter, Ranganathan Prabhakar, Sameer Jadhav, Julio Soria, Reza Nosrati, Moira O'Bryan. CRISPs regulates efficient flagellar energetics and optimal sperm function., 54th European Society of Human Genetics (ESHG) Conference (2021).