

# Robin Joseph

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## Education

### Indian Institute of Science (IISc)

PhD - Aerospace Engineering (Thesis Submitted)

Bengaluru

August 2017 - July 2023

### Indian Institute of Technology (IIT)

M.Tech - Mechanical Engineering

Guwahati

July 2015 - July 2017

### Indian Institute of Technology (IIT)

B.Tech - Mechanical Engineering

Patna

July 2011 - July 2015

## Technical Skills

**Programming Languages** MATLAB, Python, SQL

**Data Analysis** Statistics, Principal Component Analysis, Numerical Simulations, Machine Learning

## Experience

### Freelance Analyst

[www.marketsentiment.co](http://www.marketsentiment.co)

Analyst

August 2022 - December 2022

- Worked with a top finance newsletter (40k+ North American audience) to benchmark investment strategies and breakdown financial news
- Developed a Python-based trend trading model to enhance risk-adjusted returns across various investment portfolios. Implemented a Monte-Carlo simulation on the portfolio to identify efficient frontier and minimum variance portfolio

### Computational Analysis of Experimental Data

IISc-Bangalore

Research Assistant/ Teaching Assistant

August 2017 - Present

- **Spectral, Statistical and Principal Component Analysis** - Developed MATLAB and Python programs for analysis of high sampling rate time series data and to identify dominant features in large image datasets acquired from fluid flow visualizations
- **Machine Learning** - Identifying turbulent spots (burst detection) in velocity signals (proof of concept) using Mask-RCNN object detection
- **Stability analysis** - Analyzed the dynamics and control of cylinder wake oscillations using an in-house FORTRAN code in a Linux environment
- **Scientific communication** - Drafted documents for patent application, journals and conferences, reviewed research papers
- **Teaching Assistant**- Supervised laboratory sessions, delivered lectures, prepared and graded assignments/quizzes

## Research Outcomes

### Patent Application

- [1] Robin Joseph, P. Phani Kumar, Sourabh Suhas Diwan, "Aerofoil Bodies for Delaying Roughness-Induced Transition of Laminar Flow of Fluids into Turbulent Flow" *Patent application filed at the Indian Patent Office (pre-print available)*

### Publications

- [1] Robin Joseph, P. Phani Kumar, Sourabh Suhas Diwan, "Characterization of streak development for boundary layer transition caused by isolated and distributed roughness" *Under consideration by Physics of Fluids* [Pre-print]
- [2] Robin Joseph, P. Phani Kumar, Sourabh Suhas Diwan, "Delaying transition induced by random distributed roughness using additional fine grit roughness" *To be submitted to AIAA journal, available on arXiv*
- [3] Robin Joseph, Sourabh Suhas Diwan, "Growth of Disturbances in a Pre-transitional Boundary Layer Downstream of Distributed Surface Roughness" *Asian Congress of Fluid Mechanics*, p. 393-402. [Link] [YouTube video of presentation]
- [4] Robin Joseph, Sourabh Suhas Diwan, "Effect of Distributed Roughness on Boundary Layer Transition Induced by Free-stream Turbulence" *American Institute of Aeronautics and Astronautics, Aviation Forum 2022*, p. 3813 [Link]