

# Sandeep Reddy Bukka

Post-Doc @MPI, Germany



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## Education

Ph.D. | Data-Driven Computational Fluid Dynamics | National University of Singapore | 2020 | GPA: 4.33/5 |

B.Tech & M.tech (Dual Degree) | Ocean engg & Applied Mechanics | IIT Madras | 2015 | 8.21/10

## Skills

Languages: python, Matlab, FORTRAN, Julia  
Simulation : Ansys, FLUENT, STAR-CCM+, AVEVA Marine  
Certifications: completed Deep learning and Tensorflow in practice specializations from coursera, EPAT-2020 @Quantinsti

## Student Leadership

Resident assistant @ Utown residence  
- In charge for around 60 to 70 students at graduate residence.  
- Organized several events at graduate residence which include Welcome reception, Diwali night, UTR movie night, Acting 101 workshop, Art carnival  
- Received outstanding RA award  
- UTR welcome reception and UTR art carnival received best event awards.

Hospitality core @ SAARANG 2015  
- One of the 23-member Core team of SAARANG\*, budgeted at 10 million INR and above.  
- Lead a team of 45 members which had a budget of around 0.3 million INR and turnover of 0.6 million INR.  
- Reached the position of coreship in final year gradually from the stage of volunteer in first year.  
SAARANG is Annual Cultural Festival of IIT Madras

## Summary

Self-driven and innovative researcher with expertise in data-driven computational methods/A.I. models for dynamical systems and more than 6 years of experience in high level programming. It is my strong desire to build on this experience and create cutting-edge solutions at the intersection of data-driven science with the traditional physics-based methods.

## Research and Work experience

Post-Doc  
@MPI

Physics Enhanced Machine learning 09/21 - present  
- Development of parsimonious dynamical models using scientific machine learning  
- Discovery of Phase-field models from STEM data-sets

Scientist  
@TCOMS

Development of digital twin of deep water ocean basin 03/20 - 09/21  
- Reconstruction of ocean wave field from instantaneous probe data using the concepts of compressed sensing  
- Reduced order models for fast propagation of multi-directional ocean wave fields  
- Data-driven models for reconstruction and propagation of multi-directional ocean wave fields

Research Scholar,  
Research Engineer  
@NUS

Data-driven computing for stability analysis and prediction of fluid-structure interaction 08/15 - 03/20  
- Data-driven computing for stability analysis of passive suppression  
- Hybrid reduced order model for fluid structure interaction  
- Convolutional recurrent autoencoder networks for complete prediction of flow field.  
- Model order reduction for nonlinear evolution of ocean waves

## Publications

- Bukka, S. R., Law, Y. Z., Santo, H., Chan, E. S. (2021). Reduced order model for nonlinear multi-directional ocean wave propagation. Physics of Fluids, 33(11), 117115.
- Bukka, S. R., Gupta, R., Magee, A. R., Jaiman, R. K. (2021). Assessment of unsteady flow predictions using hybrid deep learning based reduced-order models. Physics of Fluids, 33(1), 013601
- Bukka, S. R., Magee, A. R., Jaiman, R. K. (2020). Stability analysis of passive suppression for vortex-induced vibration. Journal of Fluid Mechanics, 886.

## Scholastic Achievements

- All India Ranks: IIT-JEE 2887/ out of 0.5 million, AIEEE 2788 out of 1 million, GATE 90 in Engineering Sciences Paper, EAMCET 3566 out of 0.2 million (state level)

## Extra Curricular Activities and Interests

- Runner up in basket-ball, volley ball and kho- kho games in school competitions
- Participated in three Half Marathons and a full Marathon in singapore.
- Taekwondo practitioner, currently at black belt
- Outdoor person with great affinity towards martial arts, driving, adventure sports, travel and fitness