

Dr. J. P. Panda, Ph.D.(IITKGP)

CONTACT INFORMATION	Aerospace and Mechanical Engg. Dept. University of Notre Dame, South Bend Indiana, USA	Phone: +91-9439701768 Email: jppanda.iit@gmail.com Homepage: https://dr-jppanda.github.io
CURRENT POSITION	Post-Doctoral Research Associate Computational Mechanics and Scientific Artificial Intelligence Lab Department of Aerospace and Mechanical Engineering University of Notre Dame, USA +1-(551) 260-1943, jpanda@nd.edu	
CURRENT RESEARCH	Thermal management of intel micro-chip, Nano-transistor heat transfer modeling	
RESEARCH INTERESTS	Turbulent Flows, Data-driven Turbulence Modeling, Scientific Machine Learning, Non-Equilibrium Fluid Dynamics, Micro-Nano thermo-fluid-solid mechanics, Computational Thermo-Fluid-Solid Dynamics	
EXPERIENCE	University of Notre Dame, USA Oct 2023 to Present Post-Doctoral Research Associate Funding Agency: Defense Advanced Research Projects Agency (DARPA), USA Role: Data driven heat transfer modeling in nano-transistors using physics informed neural networks Gyeongsang National University, South Korea Aug 2022 to Sep 2023 Post-Doctoral Research Fellow Funding Agency: NRF-South Korea, AFSOR-USA Indian Institute of Technology Kharagpur, India Mar 2019 to June 2021 Research Associate Funding Agency: NRB, Defense Research and Development Organisation, India	
EDUCATION	Indian Institute of Technology Kharagpur , Kharagpur, WB, India Ph.D., Computational Fluid Dynamics (Turbulence Modeling), Aug 2019 <ul style="list-style-type: none">• Department: Ocean Engineering and Naval Architecture• Thesis Topic: <i>Pressure Strain Correlation Modeling for Turbulent Flows</i> Indian Institute of Engineering Science and Technology, Shibpur , WB, India M.E., Mechanics of Fluids (Microfluidics), June 2015 <ul style="list-style-type: none">• Department: Aerospace Engineering and Applied Mechanics• Thesis Topic: <i>Electroosmotic Mixing and Joule Heating in Microchannels</i> National Institute of Electronics and Information Technology, India P.G. (Post Graduate), Data Engineering, Online Course, Nov 2023 <ul style="list-style-type: none">• Configuring Linux Platform for Data Engineering• Data Analytics and Machine Learning using Tensorflow and Keras• Big Data Analytics with Hadoop and Apache Spark Biju Patnaik University of Technology, Rourkela , ODISHA, India B.Tech., Mechanical Engineering, June 2012 <ul style="list-style-type: none">• Project: <i>Design and fabrication of a pneumatic material handling system</i>• CGPA 8/10	

1. **Panda, J.**, Warrior, H., “A representation theory based model for the rapid pressure strain correlation of turbulence” 2018, *ASME Journal of Fluids Engg.*, Vol. 140 / 081101-1. (Impact Factor: 1.995) (Q2 Mechanical Engineering)
2. **Panda, J.**, Warrior, H., “Modeling pressure strain correlation for turbulent flows using deep neural networks” 2021, *Proceedings of the Institution of mechanical engineers, Part C: Journal of Mechanical Engg. Science.* (Impact Factor: 1.762). (Q2 Mechanical Engineering)
3. **Panda, J.**, Warrior, H., “Data-driven prediction of complex flow field over an axisymmetric body of revolution using Machine Learning” 2022, *ASME Journal of Offshore Mechanics and Arctic Engineering.* (Impact Factor: 1.355) (Q2 Energy)
4. **Panda, J.**, Warrior, H., “Evaluation of machine learning algorithms for predictive Reynolds stress transport modeling” 2021, *Acta Mechanica Sinica* , (Impact Factor: 1.975) (Q2 Computational Mechanics)
5. **Panda, J.**, Kumar, B., Kumar, A., Patil, A., “Influence of twisted tape length on the thermal performance of a heat exchanger tube” 2022, *Numerical Heat Transfer, Part A: Applications*, (Impact Factor: 2.928) (Q2 Condensed matter physics)
6. **Panda, J.**, Kumar, B., Patil A., Kumar M. “Machine learning assisted modelling of thermohydraulic correlations for heat exchangers with twisted tape inserts, 2023, *Acta Mechanica Sinica* (Accepted), (Impact Factor: 1.975) (Q2 Computational Mechanics)
7. **Panda, J.**, Warrior, H., “Numerical studies on drag reduction of an axisymmetric body of revolution with antiturbulence surface” 2021, *ASME Journal of Offshore Mechanics and Arctic Engineering*, 143(6), p.064501. (Impact Factor: 1.355) (Q2 Energy)
8. **Panda, J.**, Warrior, H., Maity, S., Mitra, A., Sasmal, K., “An improved model including length scale anisotropy for the pressure strain correlation of turbulence” 2017, *ASME Journal of Fluids Engineering*, Vol. 139 / 044503-1. (Impact Factor: 1.995) (Q2 Mechanical Engineering)
9. **Panda, J.**, “A review of pressure strain correlation modeling for Reynolds stress models ” 2019, *Proceedings of the Institution of Mechanical Engineers, Part C: Journal of Mechanical Engineering Science.* DOI: <https://doi.org/10.1177/0954406219893397>. (Impact Factor: 1.762) (Q2 Mechanical Engineering)
10. **Panda, J.**, Mitra, A., Warrior, H., “A review on the hydrodynamic characteristics of autonomous underwater vehicles” 2020. *Proceedings of the Institution of Mechanical Engineers, Part M: Journal of Engineering for the Maritime Environment*, DOI: <https://doi.org/10.1177/1475090220936896>. (Impact Factor: 1.389) (Q2 Mechanical Engineering)
11. **Panda, J.**, “A reliable pressure strain correlation model for complex turbulent flows” 2020. *Journal of applied fluid mechanics*, Vol. 13, No. 4, pp. 1167-1178. (Impact Factor: 1.783) (Q3 Condensed matter physics)
12. Mitra, A. **Panda, J.**, Warrior, H., “The effects of free stream turbulence on the hydrodynamic characteristics of an AUV hull form” 2019. *Ocean Engineering*, Vol. 174 (2) / 148-158. (Impact Factor: 3.795) (Q1 Environmental engineering)
13. Mitra, A., **Panda, J.**, Warrior, H., “Experimental and numerical investigation of the hydrodynamic characteristics of Autonomous Underwater Vehicles over seabeds with complex topography” 2020. *Ocean Engineering*, Volume 198, 106978 . (Impact Factor: 3.795) (Q1 Environmental engineering)

14. **Panda, J.**, Sasmal, K., Maity, S., Warrior, H., “A Simple Nonlinear Eddy Viscosity Model for Geophysical Turbulent Flows” 2020, *Journal of Applied Fluid Mechanics*, 14(3). (Impact Factor: 1.783) (Q3 Condensed matter physics)
15. **Panda, J.**, Mitra, A., Joshi, A., Warrior, H., “Experimental and numerical analysis of grid generated turbulence with and without mean strain” 2018, *Experimental Thermal and Fluid Science*, Vol. 98 (11) / 594-603. (Impact Factor: 3.232) (Q1 Aerospace engineering)
16. **Panda, J.**, Handique J., Warrior, H., “Mechanics of drag reduction of an axisymmetric body of revolution with shallow dimples” 2022, *Proceedings of the iMech, Part M: Journal of Engineering for Maritime Environment*. (Impact Factor: 1.389) (Q2 Mechanical Engineering)
17. **Panda, J.** “Machine learning for Naval Architecture Ocean and Marine Engineering” 2023, *Journal of Marine Science and Technology*. (Impact Factor: 2.005) (Q1 Mechanical Engineering)
18. **Panda, J.** “The hydrodynamic characteristics of autonomous underwater vehicles in rotating flow fields” 2023, *Proceedings of the iMech, Part M: Journal of Engineering for Maritime Environment*. (Impact Factor: 1.389) (Q2 Mechanical Engineering)

INTERNATIONAL
CONFERENCE
PUBLICATIONS

1. **Panda, J.**, Myong, R. S., “Subgrid Modeling for Large Eddy Simulation of Shock Boundary Layer Interaction Using Machine Learning” 2023. *The 14th Asian Computational Fluid Dynamics Conference, CSIR, National Aerospace Laboratories, Bengaluru, India* (Accepted).
2. **Panda, J.**, Sengupta, B., Myong, R. S., “Direct numerical simulation of shock turbulence interaction with bulk viscosity effects” 2023. *The 34th International Symposium on Shock Waves, Daegu, Korea*.
3. **Panda, J.**, Gupta, S., Pal, D., “Computational Analysis of Liquid-Liquid Mixing In a T-Shaped Serially Connected Converging-Diverging microchannel” 2014. *59th Congress of ISTAM, IIT Kharagpur, India*.
4. Mohapatra, P., **Panda, J.**, Pal, D., “Electro-osmotic Flow and Mixing in a Micro-channel: A Numerical Study” 2014. *59th Congress of ISTAM, IIT Kharagpur, India*.
5. **Panda, J.**, Warrior, H., Maity, S., “Pressure Strain Correlation for decaying homogeneous turbulence” 2016. *Fluid Mechanics and Fluid Power Conference held at MNNIT Allahabad, India*.
6. Joshi, A., Warrior, H., **Panda, J.** “An Improved Single Point Closure Model Based on Dissipation Anisotropy for Geophysical Turbulent Flows” 2018. *Int. Conference on Oceanography held at Miami, USA*.
7. Gupta, S., **Panda, J.**, Nandi, N. “A Model Study of Free Vortex Flow” 2014. *ICTACEM Conference held at IIT Kharagpur, India*.

SCHOLARSHIPS

- MHRD government of India fellowship for doctoral studies , India 2015-2018
- MHRD government of India fellowship for PG studies , India 2013-2015

PROGRAMMING AND SOFTWARE SKILLS	<p>Programming: Python, C/C++</p> <p>Software/Codes: Docker and Singularity container ANACONDA (For python environments) JAX-Fluids (DNS and LES) (Parallel CUDA, Python) STREAMS (DNS) (Parallel MPI/CUDA, FORTRAN) GiftBTE (Boltzmann transport equation) (submicron thermal transport) OpenFOAM (RANS, LES, DSMC) (Parallel MPI, C++) SU2 (Parallel MPI, C++) ANSYS Fluent (RANS and RSTM) Gmsh/Ansys-workbench/Gambit (Meshing) SPARTA and Prof. Bird's code (DSMC) TensorFlow and Keras (Deep learning) TensorFlowFoam(Linking neural network models with OpenFoam) Scikit Learn (Machine Learning) MATLAB</p>
EXPERIMENTAL WORK	<p>Instrument: Acoustic Doppler Velocimeter Principle of operation: Doppler Shift Measured parameters: Three fluctuating turbulent velocity components in grid generated turbulence with and without mean strain Location: Recirculating water tank, Ship Hydrodynamics Lab, IIT Kharagpur</p>
REVIEWER	<p>Physics of Fluids Proceeding of the IMECH part C: Journal of Mechanical Engineering and Science Thermal Science Ocean Engineering International Journal of Fluid Mechanics Research Industrial Robot</p>
REFERENCES	<p>Prof. Tengfei Luo (Postdoc advisor) Professor Department of Aerospace and Mechanical Engg. University of Notre Dame, USA Phone: +1-574-631-9683 E-mail: tluo@nd.edu</p> <p>Prof. Jian-Xun Wang (Postdoc advisor) Assistant Professor Department of Aerospace and Mechanical Engg. University of Notre Dame, USA Phone: +1-574-631-5302 E-mail: jwang33@nd.edu</p> <p>Prof. R. S. Myong (Postdoc advisor) Professor School of Mechanical and Aerospace Engg. Gyeongsang National University, South Korea Phone: +82-55-772-1645 E-mail: myong@gnu.ac.kr</p> <p>Prof. Hari V. Warrior (Phd advisor) Professor OENA Department IIT Kharagpur, India Phone: +91-3222-283778 E-mail: warrior@naval.iitkgp.ac.in</p>

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PROFILE

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