

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	Data Driven multi-scale electro-thermal modeling in microelectronic circuits	
RESEARCH INTERESTS	Turbulent Flows, Data-driven Modeling, Scientific Machine Learning, Non-Equilibrium Fluid Dynamics, Micro-Nano thermo-mechanics, Computational Thermo-Fluid Mechanics	
EXPERIENCE	University of Notre Dame, USA Oct 2023 to Present Post-Doctoral Research Associate Funding Agency: Defense Advanced Research Projects Agency (DARPA), USA Roles: Data driven electro-thermal modeling in micro chip, Chip design using intel and global foundries PDK for thermal measurements Gyeongsang National University, South Korea Aug 2022 to Sep 2023 Senior Researcher Funding Agency: NRF-South Korea, AOARD-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., Ocean Engineering and Naval Architecture, Aug 2019 <ul style="list-style-type: none">• Specialization: Computational Fluid Dynamics (Turbulence Modeling)• 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. Das A., Das, SR., **Panda, J.**, Dey A.,Gajrani KK., Somani N., Gupta N. “Machine learning based modelling and optimization in hard turning of AISI D6 steel with advanced AlTiSiN coated carbide inserts, 2022, *Surface Review and Letters*. (Impact Factor: 1.303) (Q3 Materials chemistry)
16. Somani, N., Walia, A., Gupta, N., **Panda, J.**, Das, A., Das S. “Data driven surrogate model-based optimization of the process parameters in electric discharge machining of D2 steel using Cu-SiC composite tool” 2023, *Revista de Metalurgia*. (Impact Factor: 0.8) (Q3 Metals and Alloys)
17. **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)
18. **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)
19. **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)
20. Mitra, A.,**Panda, J.**, Warrior, H., “The hydrodynamic characteristics of autonomous underwater vehicles in rotating flow fields” 2023, *Proceedings of the iMech, Part M: Journal of Engineering for Maritime Environment* (Q2 Mechanical Engineering).

SUBMITTED
JOURNAL
PUBLICATIONS

1. Shang, W, Jhou, J,**Panda, J.**,...,Wang, J , Luo, T,., “JAX-BTE: A GPU-accelerated, differentiable solver for phonon boltzmann transport equations” 2025,npj Computational Materials.

INTERNATIONAL
CONFERENCE
PUBLICATIONS

1. **Panda, J.**,...,Wang, J , Luo, T, “Scalable Thermal Analysis of Field-Effect Transistors Using Neural Operators” 2025. *18th U.S. National congress on computational mechanics, Chicago, Illinois, July 20-24, 2025*.
2. **Panda, J.**,...,Wang, J , Luo, T, “Data-Driven Prediction of Thermal Field in Field-Effect Transistors Using Deep Neural Networks” 2024. *ASME 2024 Heat Transfer Summer Conference (SHTC2024)*.
3. Zhou J, **Panda, J.**,...,Wang, J , Luo, T, “ Jax-Bte: A Differentiable Hybrid Neural Solver for Deep Learning Accelerated Thermal Modeling of Nanoelectronics ” 2024. *ASME 2024 Heat Transfer Summer Conference (SHTC2024)*.
4. Shang W, **Panda, J.**,...,Wang, J , Luo, T, “Physics-Integrated Hybrid Machine Learning Model for Phonon Bte ” 2024. *ASME 2024 Heat Transfer Summer Conference (SHTC2024)* .
5. Zhou J, **Panda, J.**,...,Wang, J , Luo, T, “ Physics-Informed Neural Networks for Transistor Thermal Modeling Using Phonon Boltzmann Transport Equation ” 2024. *ASME 2024 Heat Transfer Summer Conference (SHTC2024)*.

6. J Zhou, R Li, W Shang, B Zhang, Z Xu, **Panda, J.**, J Wang, T Luo, T Beechem, E Walker, "Efficient Physics-Informed Deep Learning Model for Multiscale Thermal Analysis" 2024. *Government Microcircuit Applications and Critical Technology (GOMACTech) Conference*.
7. **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*.
8. **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*.
9. **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*.
10. 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*.
11. **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*.
12. 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*.
13. Gupta, S., **Panda, J.**, Nandi, N., "A Model Study of Free Vortex Flow" 2014. *ICTACEM Conference held at IIT Kharagpur, India*.

TEACHING EXPERIENCE	Dehradun Institute of Technology (DIT), University, India Assistant Professor	2021 to 2022
SCHOLARSHIPS	<ul style="list-style-type: none"> • MHRD government of India fellowship for doctoral studies , India • MHRD government of India fellowship for PG studies , India 	2015-2018 2013-2015
PROGRAMMING AND SOFTWARE SKILLS	Programming: Python, C/C++ 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	

EXPERIMENTAL WORK	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	
PROFESSIONAL PROFILES	Google Scholar Profile : Citation: 495, h-index: 11, i10-index: 14 Researchgate Profile , Linkedin Profile	
GUEST EDITOR	Springer: Discover Fluid Mechanics Journal of Marine Science and Engineering Frontiers in Mechanical Engineering	
REVIEWER	Physics of Fluids International Journal of Mechanical Sciences Proceeding of the IMECH part C: Journal of Mechanical Engineering and Science Thermal Science Ocean Engineering International Journal of Fluid Mechanics Research Industrial Robot	
REFERENCES	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
	Prof. Jian-Xun Wang (Postdoc advisor) Associate Professor Department of Aerospace and Mechanical Engg. University of Notre Dame, USA	Phone: +1-574-631-5302 E-mail: jwang33@nd.edu
	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
	Prof. Hari V. Warrior (Phd advisor) Professor OENA Department IIT Kharagpur, India	Phone: +91-3222-283778 E-mail: warrior@naval.iitkgp.ac.in
	Prof. Debashis Pal (Master's advisor) Assistant Professor AEAM Department IIEST, Shibpur, India	Phone: +91-33- 26684561 E-mail: debashis@aero.iiests.ac.in
PERSONAL PROFILE	NAME: Jyoti Prakash Panda NATIONALITY: Indian	