

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

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| CONTACT INFORMATION | Mechanical and Materials Engg. Dept. University of Cincinnati, Cincinnati Ohio, USA | Phone: +91-9439701768 Email: jppanda.iit@gmail.com Homepage: https://dr-jppanda.github.io |
| CURRENT POSITION | Post-Doctoral Fellow Department of Mechanical and Materials Engineering University of Cincinnati, USA +1-(551) 260-1943, pandajp@ucmail.uc.edu | |
| CURRENT RESEARCH | Experimental and data driven modeling of acoustic sensing in flow condensation | |
| 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 Cincinnati, USA May 2025 to Present Post-Doctoral Research Fellow Funding Agency: National Aeronautics and Space Administration (NASA), USA University of Notre Dame, USA Oct 2023 to May 2025 Post-Doctoral Research Associate Funding Agency: Defense Advanced Research Projects Agency (DARPA), USA 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. Shang, W, Zhou, J, **Panda, J.**, Wang, J , Luo, T., “JAX-BTE: a GPU-accelerated differentiable solver for phonon Boltzmann transport equations. *npj Computational Materials*, 11(1), pp.1-12.(Q1 Computer Science Applications)
3. **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)
4. **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)
5. **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)
6. **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)
7. **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)
8. **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)
9. **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)
10. **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)
11. **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)
12. **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)
13. 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)

14. 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)
15. **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)
16. 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)
17. 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)
18. **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)
19. **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)
20. **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)
21. 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. Jhou, J, Shang, W, **Panda, J.**, Wang, J , Luo, T, “Physics-informed neural networks with hard-encoded angular-dependent boundary conditions for phonon Boltzmann transport equation, *International Journal of Heat and Mass Transfer* (2025) (submitted).

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*.

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| 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

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| 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: 530, h-index: 12, 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, ASME Journal of heat and mass transfer, , International Journal of Mechanical Sciences , Thermal Science and Engineering Progress , International Journal of Thermofluids , 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 | <div> <div> <p>Prof. Tengfei Luo (Postdoc advisor)</p> <p>Professor</p> <p>Department of Aerospace and Mechanical Engg.</p> <p>University of Notre Dame, USA</p> </div> <div> <p>Phone: +1-574-631-9683</p> <p>E-mail: tluo@nd.edu</p> </div> </div> <div> <div> <p>Prof. Jian-Xun Wang (Postdoc advisor)</p> <p>Associate Professor</p> <p>Sibley School of Mech. and Aero. Engineering</p> <p>Cornell University, USA</p> </div> <div> <p>Phone: +1-574-631-5302</p> <p>E-mail: jw2837@cornell.edu</p> </div> </div> <div> <div> <p>Prof. R. S. Myong (Postdoc advisor)</p> <p>Professor</p> <p>School of Mechanical and Aerospace Engg.</p> <p>Gyeongsang National University, South Korea</p> </div> <div> <p>Phone: +82-55-772-1645</p> <p>E-mail: myong@gnu.ac.kr</p> </div> </div> <div> <div> <p>Prof. Hari V. Warrior (Phd advisor)</p> <p>Professor</p> <p>OENA Department</p> <p>IIT Kharagpur, India</p> </div> <div> <p>Phone: +91-3222-283778</p> <p>E-mail: warrior@naval.iitkgp.ac.in</p> </div> </div> <div> <div> <p>Prof. Debashis Pal (Master's advisor)</p> <p>Assistant Professor</p> <p>AEAM Department</p> <p>IEST, Shibpur, India</p> </div> <div> <p>Phone: +91-33- 26684561</p> <p>E-mail: debashis@aero.iests.ac.in</p> </div> </div> |

PERSONAL
PROFILE

NAME: Jyoti Prakash Panda

NATIONALITY: Indian