

# Praveen Dattatry Malali

## Curriculum Vitae

Department of Mechanical Engineering  
AEC 408, Acopian Engineering Center  
740 High Street, Lafayette College  
Easton, PA 18042

## EDUCATION

- Ph.D. Department of Mechanical Engineering, Old Dominion University, Norfolk, 2015  
M.S. Department of Mechanical Engineering, Old Dominion University, Norfolk, 2010  
B.E. Department of Industrial Engineering, BMS College of Engineering, Bangalore, 2006

## PROFESSIONAL EXPERIENCE

- 2021-present Visiting Assistant Professor, Department of Mechanical Engineering, Lafayette College  
2020-2021 Postdoctoral Research Fellow, Department of Mathematics, Computer Science & Engineering Technology, Elizabeth City State University  
2017-2020 Director of Research, Center for Sustainable Energy & Environmental Engineering, East Carolina University  
2015-2017 Adjunct Assistant Professor, Department of Mechanical Engineering, Old Dominion University

## GRANTS & RESEARCH AWARDS

- 2022 Extraction of Renewable Hydrokinetic Energy from Ocean Currents, Ding. Z and **Malali. P (PI)**. Lafayette College EXCEL Scholar program, Total: \$2,000; 2022-2023. (*Awarded*)  
Collaborative Research: Using Metacognition to Enhance Student Learning in Thermodynamics, **Malali, P (PI)**, Rossman, T (Co-PI), Talarico, J (Co-PI). In collaboration with NC Agricultural and Technical State University (N. C. A&T). National Science Foundation, Total: \$ 299, 971; 2023-2025. (*Recommended for funding; withdrawn due to lack of institutional support*)  
2020 Evaluating the coastal protection and ecological co-benefits of novel marsh-Oyster restoration approaches, Gittman. R (PI), **Malali. P (Co-PI)**, Narayan. S (Co-PI). U. S. Coastal Research Program, Total: \$299,823; 2021-2023.

- 2019 Renewable Energy and Green Manufacturing Academy for Rural Middle School Students in Eastern North Carolina, Agarwala. R (PI), **Malali. P (Co-PI)**, Das. K (Co-PI), Dickerson. D (Co-PI), Abdel-Salam. T (Co-PI). Burroughs Wellcome Fund, Total: \$177,000; 2019–2022.
- 2019 Computational Analysis of 3D Hydrofoils, **Malali, P (PI)**, Paul. C, Harmon. R, Yang. L (Co-PI). East Carolina University Undergraduate Research Creativity Award, Total dollar value: \$1,600; 2019-2020.
- 2019 Extraction of Gas Hydrates using Ocean Wave Energy, **Malali. P (PI)**, Contreras. M, Lee. E, Mitra. S (Co-PI). East Carolina University Undergraduate Research Creativity Award, Total: \$1,660; 2019-2020.
- 2018 An Innovative Bio-inspired Marine Hydrokinetic Energy Extractor, **Malali. P (PI)** and Agarwala. R (Co-PI). East Carolina University Natural Resources & Environment Cluster, Total: \$13,000; 2018-2019.
- 2018 Design and development of a frugally-engineered, low-cost energy-savings device for the built environment, Steinbaker. G, **Malali. P (PI)**. East Carolina University Undergraduate Research Creativity Award, Total: \$1,200; 2018-2019.
- 2017 Pollution Prevention: Greening of Food and Beverage Industries in North Carolina, Abdel-Salam. T (PI), Das. K (Co-PI), Elsayaf. N (Co-PI), **Malali. P (Snr Personnel)**. Environmental Protection Agency, Total: \$273,000; 2017-2019.

## PUBLICATIONS

### Peer Reviewed Book Chapter

- 2022 “Two-dimensional Nanomaterials Design and Reactor Engineering of Different Methods for CO<sub>2</sub> Electrochemical Conversion Process.” Kumar, B., **Malali, P.**, Sadasivuni, K., Kannan, K. *2D Nanomaterials for CO<sub>2</sub> Conversion into Chemicals and Fuels*. (Royal Society of Chemistry).  
<https://pubs.rsc.org/en/content/chapter/bk9781839163111-00211/978-1-83916-311-1>)

### Peer Reviewed Journal Articles

- 2022 Teaching Calibration in the Geosciences. **Malali, P.**, Patel, S., Dickerson, J., Moore, S., & Dickerson, D. *In the Trenches: The National Association of Geoscience Teachers*. (Under review)
- Low Platinum-Loaded Molybdenum Co-catalyst for the Hydrogen Evolution Reaction in Alkaline and Acidic Media. **Malali, P.**, Muchharla, B., Sadasivuni, K., Cao, W., Elsayed-Ali, H, E., Adedeji, A., Abdennaceur, K., Aboubakr, M. A., Abdullah, Spurgeon, J.M, Kumar, B. *Langmuir*, 38(31): 9526–9531.  
<https://doi.org/10.1021/acs.langmuir.2c00902>)
- 2021 Tri-molybdenum Phosphide (Mo<sub>3</sub>P) and Multi-Walled Carbon Nanotubes Junctions for Volatile Organic Compounds (VOCs) Detection. Muchharla, B., **Malali, P.**, Daniel, B., Kondori, A., Asadi, M., Cao, W., Elsayed-Ali, H., Castro,

- M., Elahi, M., Adedeji, A., Sadasivuni, K., Maurya, M., Kumar, K., Karoui, A., Kumar, B. *Applied Physics Letters*, 119(11): 113101-7.  
(<https://aip.scitation.org/doi/full/10.1063/5.0059378>)
- 2020 Assessment of Currently Available Ocean Wave Energy Conversion Systems Using Technology Readiness Levels. **Malali, P.** & Marchand, K. *International Journal of Renewable Energy Technology*, 11(2): 126-146.  
(<https://www.inderscience.com/info/ingeneral/forthcoming.php?jcode=ijret>)
- Planning for future solar farm development in North Carolina: A geographic food-energy-water approach. Curtis, S., Etheridge, R., **Malali, P.**, Peralta, A., Filho, F. *Southeastern Geographer*, 60(1): 47-63.  
(<https://muse.jhu.edu/article/747969>)
- 2019 Effects of Circumsolar Radiation on the optimal performance of a Stirling Heat Engine Coupled with a Parabolic Dish Solar Collector. **Malali, P.**, Chaturvedi, S. K., Agarwala, R. *Applied Thermal Engineering*, 159: 1-10.  
(<https://www.sciencedirect.com/science/article/pii/S1359431118377846?via%3Dihub>)
- 2019 Design of a Nonlinear Multi-Input-Multi-Output Sliding Mode Pitch Angle and Plunge Controller for a 5MW Wind Turbine Blade Tip. Agarwala, R., Chin, R., **Malali, P.** *Energy Sources, Part A: Recovery, Utilization, and Environmental Effects*, 1-15. ( <https://doi.org/10.1080/15567036.2019.1582735>)
- 2017 Performance Optimization of a Regenerative Brayton Heat Engine Coupled with a Parabolic Dish Solar Collector. **Malali, P.**, Chaturvedi, S.K., Abdel-Salam, T. *Energy Conversion and Management*, 143: 85 – 95.  
(<https://doi.org/10.1016/j.enconman.2017.03.067>)
- 2016 An approximate method for prediction of thermal performance of direct expansion-solar assisted heat pump (DX-SAHP) systems for water heating applications. **Malali, P.**, Chaturvedi. S.K., Abdel-Salam, T. *Energy Conversion and Management*, 127: 416 - 423.  
(<http://dx.doi.org/10.1016/j.enconman.2016.09.017>)
- 2015 PSO-based Training, Pruning, and Ensembling of Extreme Learning Machine Networks. **Malali, P.** & Kotinis, M. *International Journal of Computational Engineering Research*, 5(6): 2254-2266. (<http://www.ijceronline.com/papers/5-6.pdf>)
- 2012 Uncertainty Analysis and Instrument Selection Using a Web-based Virtual Experiment. **Malali, P.**, Bais. P., Choate. R., Chaturvedi. S. K., Yoon. J. *The ASEE Computers in Education Journal*, 22(3).  
(<https://coed.asee.org/2012/07/11/uncertainty-analysis-and-instrument-selection-using-a-web-based-virtual-experiment/>)
- 2006 Comprehensive Study of Draft tube Oscillations. Sharma, C L. & **Praveen Malali, D.** *Dam Engineering*, 18(3): 157-174.  
(<https://www.waterpowermagazine.com/mediapacks/online/dam-engineering.htm>)

## Conference Proceedings

- 2022 Electrochemical CO<sub>2</sub> reduction reaction in transition metal sputtered thin films. Barbee, B., Muchharla, B., **Malali, P.**, Cao, W., Elsayed-Ali, H., Adedeji, A., Karoui, A., Sadasivuni, K. and Kumar, B. *The APS March Meeting*, March 14-18, Chicago, IL, USA.
- Platinum loaded Molybdenum thin film: An advanced electrocatalyst for the hydrogen evolution reaction. Muchharla, B., **Malali, P.**, Cao, W., Elsayed-Ali, H., Adedeji, A., Karoui, A., Sadasivuni, K. and Kumar, B. *The APS March Meeting*, March 14-18, Chicago, IL, USA.
- 2020 Modeling the Impact of Solar and Ocean Energy Integration on the Reliability and Resiliency of the Eastern North Carolina power grid system. Krieger, D., **Malali, P.** and Filho, F. *IEEE Virtual SouthEastCon*, March 26-27, Raleigh, NC, USA.
- 2019 Recruitment and retention of active duty/transitioning military personnel and veterans in STEM through workshops. **Malali, P.**, Filho, F., Stevens, J., Dickerson, D., Menke, J., Zaccardelli, K., Matthews, R., Boucher, G. *Proceedings of 2019 ASEE-SE Conference*, March 10-12, Raleigh, NC, USA.
- 2018 A Novel Design of a Solar-assisted Accelerated Composting Unit. Kurabachew D., **Malali, P.**, and Filho, F. *33rd International Conference on Solid Waste Technology and Management*, March 11-15, Annapolis, MD, USA.
- 2010 Uncertainty Analysis and Instrument Selection Using a Web-based Virtual Experiment. **Malali, P.**, Bais, P., Chaturvedi, S.K., Choate, R. *Proceedings of ASEE Annual Conference and Exposition*, June 20-23, Louisville, KY, USA.
- 2008 Experimental Study of Small Scale DC Direct MHD Thrusters. **Malali, P.**, Luettel, C., Bharadwaj, A., Ram, A., Hegde, A., Prakash, K. *Proceedings of 39th AIAA Plasma Dynamics and Lasers Conference*, June 23-26, Seattle, WA, USA.
- 2006 Magnetohydrodynamic (MHD) Submarine-Design and Construction. **Malali, P.** *Proceedings of Emerging Trends in Mechanical Engineering*, Feb 10-11, Bangalore, India.

## Technical Reports

- 2019 Energy Assessment of a National Bird Park. **Malali, P.** and Abdel-Salam, T. NC, USA.
- 2019 Lean and Green Assessment Report for Food Processing Plant. **Malali, P.**, Abdel-Salam, T. and Das, K. NC, USA.
- 2019 Lean and Green Assessment Report for Food Processing Plant. **Malali, P.**, Abdel-Salam, T. and Das, K. NC, USA.
- 2019 Lean and Green Assessment Report for a Brewery. **Malali, P.**, Abdel-Salam, T. and Das, K. NC, USA.
- 2018 Lean and Green Assessment Report for a Brewery. **Malali, P.**, Abdel-Salam, T. and Das, K. NC, USA.

- 2018 Lean and Green Assessment Report for a Food Processing Plant. **Malali, P.**, Abdel-Salam, T. and Das, K. NC, USA.
- 2017 Lean and Green Assessment Report for a Food Processing Plant. Stevens, J., **Malali, P.**, Abdel-Salam, T., and Das, K. NC, USA.
- 2017 Lean and Green Assessment Report for a Food Processing Plant. Agarwala, R., **Malali, P.**, Abdel-Salam, T., Das, K. NC, USA.

## **AWARDS**

- 2019 Best Undergraduate Research Poster Award, Design and Development of a Frugal Daylight Harvesting Sensor for the Built Environment, Steinbaker, G., Brady, J., **Malali, P.**, Filho, F. Duke Energy Week, Duke University, Durham, NC, USA.

## **INVITED TALKS**

- 2022 Calibration of a measuring device. Summer Ventures in Science and Mathematics, East Carolina University, July 15.
- 2021 An Introduction to Ocean Energy Conversion. Virtual Summer Internship: Introduction to Materials Science and Engineering, Elizabeth City State University, June 24.
- 2019 Ocean Wave Energy Conversion: History, Current Status & Future Perspectives. Marie M. Daly STEM Lecture Series, Elizabeth City State University, March 29.
- 2018 Smart control of a heaving wave energy converter in irregular seas. Professional Engineers of North Carolina Eastern Carolina, February 22.

## **SYMPOSIUM & WORKSHOP ORGANIZER**

- 2018 2<sup>nd</sup> Sustainability Symposium on Solar energy and its applications, East Carolina University, Greenville, NC, October 1.
- 2018 Workshop on Solar Energy and 3D printing for Active-duty and Transitioning Marines from the Marine Corps Air Station Cherry Point, East Carolina University, Greenville, NC, March 23 & April 19.

## **TEACHING & MENTORING EXPERIENCE**

### **Lafayette College**

Statics (spring 2022, spring 2023)

Design & Manufacturing (fall 2021, fall 2022)

Senior Design Project: Design and Development of a Glove-actuated Industrial Robotic Hand (2021–2022)

Senior Design Project (2022-2023)

## **Elizabeth City State University**

General Physics I Laboratory (spring 2021)

General Physics II Laboratory (spring 2021)

## **East Carolina University**

Dynamics (fall 2017, spring 2018)

Engineering Design & Project Management II (spring 2020)

Senior Design Project: Retrofittable Kayak Pedal Drive System (2019– 2020)

## **Old Dominion University**

Thermodynamics II (spring/fall 2015, spring/fall 2016, spring 2017)

Thermodynamics I (spring 2017)

Mechanics of Fluids (spring 2016, fall 2016)

Thermo-Fluids Laboratory (spring 2014, fall 2014)

Computer Solid Modeling (spring 2017)

Fundamentals of Engineering Thermodynamics Review (spring 2016, fall 2016)

Senior Design Project: Design Improvement and Measurement of Energy Savings Potential of Magnetic Couplings (2015–2016)

Tutor: Office of Naval Research Stern2STEM program (fall 2016, spring – summer 2017)

## **PROFESSIONAL SERVICE**

### **Reviewer**

Energy Conversion and Management (2016 – present)

Applied Energy (2019 – present)

International Journal of Heat & Mass Transfer (2019 – present)

### **To Profession**

University Search Committee for Cluster Hire for Coastal Ocean Research, Department of Coastal Studies, East Carolina University, 2019.

## **COURSES PREPARED TO TEACH**

Statics & Dynamics

Engineering Design & Manufacturing

Basic & Applied Thermodynamics

Fluid Mechanics

Heat & Mass transfer

Renewable Energy

Energy Conversion Methods

Thermo-fluid Systems/Laboratory

Vibrations

Gas Dynamics

Senior Design Project