Krishnakumar Rajagopalan

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Present Position Assistant Researcher, Hawaii Natural Energy Institute, University of Hawaii, Honolulu, Hawaii, 96826

Education

-University of Hawaii, Ph.D, Ocean and Resources Engineering, 2010
-Indian Institute of Science, Master of Science, Mechanical Engineering, 1999
-Cochin University of Science and Technology, B.Tech, Naval Architecture and Ship Building, 1991

Research Experience

-2016 till date: Assistant Researcher, HNEI, University of Hawaii (Current Position)
Research focused on fluid structure interaction and development of Wave Energy Converters (WECs). As numerical lead for the Wave Energy Test Site (WETS), conducts performance evaluation, mooring design and collaborative research on WEC development.

-2010-2015: Post-doctoral researcher, University of Hawaii
Numerical modeling of ocean circulation with MITgcm and wave energy converters using OpenFOAM CFD package.

-2002-2010: Graduate Research Assistant, University of Hawaii
Conducted numerical modeling of turbulent boundary layers using OpenFOAM LES solver. Carried out numerical modeling of wave resistance of two dimensional hydrofoils with OpenFOAM (rasInterFoam) CFD solver. Modified solver for improving stability and free surface prediction. Studied wave breaking of hydrofoils, tip vortices of finite foils and multi-foil interaction using COMET CFD solver. Designed and constructed an open channel for experimental studies on wave making characteristics of hydrofoils

-1992-2002: Scientist, Naval Science and Technological Laboratory, India
Conducted hydrodynamic model tests of surface and submerged models (Resistance, Propulsion and Vertical Planar Motion Mechanism (VPMM) tests). Estimated hydrodynamic coefficients of submerged bodies and ships through VPMM tests and theory, for studying the maneuvering and trajectory simulation.

Grants Awarded

-Numerical lead for DoE[1]award (http://manoa.hawaii.edu/news/article.php?aId=9712)

-Co-PI of DoE award for enhancing marine energy test infrastructure

-Stage 1 & Stage 2 winner, Waves to Water DoE prize competition

-National Science Foundation Travel Grant: *International Conference on Fluxes and Structures in Fluids: Physics of Geo-spheres*, June24-27, 2009, Moscow, Russia

-Maui High Performance Computing Center

-Engagement Grant, 2007

-Travel Grant: Super Computing Conference (SC08), 2008, Austin, Texas

Awards and Titles

-Department of Ship Technology, Cochin University of Science and Technology, University Merit Scholarship, 1987-1991

Publications (Journals)

Rajagopalan, K., Nihous, G.C., *Study of the force coefficients on plates using an open source numerical wave tank*, Ocean Engineering, 2016.

Rajagopalan, K., Nihous, G.C., *Predictions of Water-Column Properties under Widespread Artificial Upwelling Scenarios in the North Pacific Subtropical Gyre using an Ocean General Circulation Model*. J. of Marine Env. Engg. 2014.

Rajagopalan, K., Nihous, G.C., *An assessment of global Ocean Thermal Energy Conversion resources under broad geographical constraints*, J. Renewable Sustainable Energy, 2013.

Rajagopalan, K., Nihous, G.C., *An Assessment of Global Ocean Thermal Energy Conversion Resources With a High-Resolution Ocean General Circulation Model*. Journal of Energy Resources Technology.2013.

Rajagopalan, K., Nihous, G.C., *Estimates of global ocean thermal energy conversion (otec) resources using an ocean general circulation model*. Renewable Energy.2013.

Jia, Y., Nihous, G.C., and **Rajagopalan**, K., "An Evaluation of the Large-Scale Implementation of Ocean Thermal Energy Conversion (OTEC) Using an Ocean General Circulation Model with Low-Complexity Atmospheric Feedback Effects", *Journal of Marine Science and Engineering*, 2018, 6, 12;

..,**Rajagopalan**, K., .., "Ocean Energy Systems Wave Energy Modelling Task: Modelling, Verification and Validation of Wave Energy Converters", *Journal of Marine Science and Engineering*, 2019, 7, 379;

[1] U.S. Department of Energy

Publications (Conferences)

Rajagopalan, **K.**, Ulm, N., Cross, P., Druetzler, A., " *WETS DEEP WATER BERTH MOORING DESIGN – DEMONSTRATION OF SOME SALIENT FEATURES OF THE MOORING THROUGH NUMERICAL MODELING*", International Conference on Ocean Energy, 2021

Rajagopalan, K., Cross, P., Nihous, G., "*Numerical Modeling Research at the US Navy Wave Energy Test Site, Honolulu, USA*", The 29th International Ocean and Polar Engineering Conference, 2019

Rajagopalan, **K.**, Cross, P., Ling, B., Lettenmaier, T., "*AZURA WEC power performance - a preliminary comparison of trial data and numerical modelling results* ", Proceedings of the 13th European Wave and Tidal Conference, 1-6 September 2019, Naples, Italy

Cross, P., **Rajagopalan**, **K**., Druetzler, A., Argyros, A., Joslin, J., Hjetland, E., Stewart, A., "*Recent Developments at the U.S. Navy Wave Energy Test Site*", Proceedings of the 13th European Wave and Tidal Conference, 1-6 September 2019, Naples, Italy

Rajagopalan, K., Cross, P., Vega, L., *NUMERICAL MODELING OF THE LIFESAVER MOORING SYSTEM for Deployment AT WETS,* Marine Energy Technology Symposium, 2018.

Rajagopalan, K., Nihous, G.C., Vega, L., Cross, P., *Numerical Modeling of A Multibody WEC Using Constraint Equations*, (Poster Presentation), Marine Energy Technology Symposium, 2017.

Cross, P., Vega, L., **Rajagopalan, K.,** Nihous, G.C., Li, N., Rocheleau, A., Anderson, P., *U.S. Navy Wave Energy Test Site – Early Findings*, European Wave and Tidal Conference, 2017.

Rajagopalan, K., Nihous, G.C., Vega, L., *DEVELOPMENT OF A MODELING SUITE TO SUPPORT WETS ACTIVITIES*, Proceedings of the 3rd Marine Energy Technology Symposium, 2015.

Rajagopalan K., Nihous, G. C., *Global Ocean Thermal resources for Sustainable OTEC Application,*, **Asia Pacific Clean Energy Summit and Expo,** Honolulu, Hawai'i, September 9-11, 2013.

Pawlak, G., **Rajagopalan, K.**, Bandet, M. *Wave and Current Flow over Broad-Banded Roughness*, 2010 Ocean Sciences Meeting, Portland, Oregon, 22-26 February 2010.

Rajagopalan, K., Pawlak, G., Patalano, A., Canals, M. and Kobayashi, M. *Large Eddy Simulation of Turbulent Boundary Layers Over Rough Beds*, International Conference on Fluxes and Structures in Fluids: Physics of Geospheres, Moscow, Russia, Sponsored by Russian Academy of Sciences and National Science Federation, June 24-27, 2009.

Rajagopalan, K., Pawlak, G., Patalano, A., Canals, M. and Kobayashi, M. *Large Eddy Simulation of Turbulent Boundary Layers Over Rough Beds*, 61st Annual meeting of the American Physical Society, Division of Fluid Mechanics, San Antonio, Texas, Nov 23-35, 2008.

Rajagopalan, K., Pawlak, G. and Kobayashi, M. *Numerical Modeling of Turbulent Boundary Layers over Rough Walls using LES*, The Pacific Congress on Marine Science and Technology(PACON 2008), Honolulu, Hawaii, June 1-5, 2008.