Manivannan Kandasamy, Ph.D.
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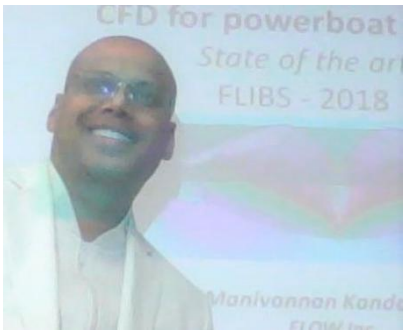

Computational Mechanical Engineer with 15+ years of CAE experience developing and applying CFD & FEA methods in conjunction with Artificial Intelligence and High Performance Computing to analyze and optimize hydrodynamic, aerodynamic, thermal, and structural designs

Adept at lean startup, cross-functional leadership, NPD, SBD, DFX, DOE, PLM, FMEA

Experience

Technical Lead Marine Engineering Consultant at Flow Inc. (May 2014 - Present)

- Lead a multidisciplinary team of hydrodynamic, structural, and software engineers to develop the cloud-based CAE tool kit FlowCFD for marine design and optimization
- Acquired and executed R&D projects encompassing all area of marine design
  - Hydrodynamic Multi-Objective Optimization
  - Structural Strength, Fatigue, Vibration, and Material Selection
  - Fluid Structure Interaction FSI, Flow Induced Vibration FIV, and NVH
  - Aerodynamically Alleviated Vehicles
  - HVAC Thermal Analysis
  - Propulsion and Turbo-machinery

  Summary of recent projects - www.flowcfd.com/recent-projects.html
- Tested prototype designs in real world conditions and provided on-site evaluations and recommendations

Research Consultant at University of Iowa (May 2014 - Dec 2015)

- Trained new team members and transitioned PLM responsibilities
- Provided guidance and expertise to the ship-hydrodynamics and optimization group

Research Faculty at University of Iowa (Sep 2005 - Apr 2014)

- Acquired and executed projects from DOD and DOT for the development and application of CAE and AI tools for Naval Engineering using High Performance Computing
- Authored/co-authored 40+ technical journal and peer-reviewed conference papers that have garnered 500+ citations. https://scholar.google.com/citations?user=mi3akCwAAAAJ&hl=en
- Trained graduate research assistants and co-supervised four Masters and two Doctoral theses

Graduate Research and Teaching Assistant at University of Iowa (Aug 1999 - Aug 2005)

Education

Ph.D. Mechanical Engineering / Computational Fluid Dynamics Major - Univ. of Iowa (2005)
M.S. Mechanical Engineering / Computational Fluid Dynamics Major - Univ. of Iowa (2001)
B.E. Mechanical Engineering - College of Engineering, Guindy (1999)

Awards

FLIBS Gosling's Young Tech Innovator Award (2016)

American Bureau of Shipping - Captain Joseph H. Linnard Prize (2010) - For best paper contributed to the Society of Naval Architects & Marine Engineers

Areas of Expertise

Computational Engineering	Mechanical Engineering	Management & Marketing
• CFD & FEA • High Performance Computing • Data Science • Artificial Intelligence • Visualization • Uncertainty Analysis • Adaptive Algorithms • Systems Integration	• Hydrodynamics • Aerodynamics • Thermodynamics • Wave Dynamics • Fluid-Structure Interaction • Vibration, Turbulence • Structural Strength • Root Cause Analysis	• Cross Functional Teams • Critical Path Method • Risk Management • Continuous Improvement • Google Analytics • Google Ad-words • Technical Writing • Interpersonal Skills

Computer Skills

Engineering Software	Programming Languages	Operating Systems
FlowCFD (developer), OpenFoam, ANSYS, Rhino, Solidworks, Creo, Pointwise, Catia, Tecplot, GT-Suite	R, Python, C++, Java, Fortran, Matlab, Basic	Linux, Windows, Mac, DOS

Services

Reviewer of technical journals for

- Ocean Engineering
- Intl. J. of Mathematical Modeling and Numerical Optimization

Selected Publications

Book Chapter: "CFD for powerboats" Contribution to Dag Pike's 2019 book 'Powerboat Design and Performance' ISBN : 9781472965394 *pdf link*

Technical Journals and Peer-reviewed Conference Publications

Design Optimization using Artificial Intelligence & High-Performance Computing

- Kandasamy *et. al.*, "CFD based hydrodynamic optimization and structural analysis of the hybrid ship hull," Society of Naval Architects and Marine Engineers - Transactions, Vol. 122, pp. 92-123, 2014 *pdf link*
- Kandasamy *et. al.*, "Simulations based design optimization of water-jet propelled Delft catamaran," International Ship Building Progress, Vol. 60, No.14, pp. 277–308, 2013 *pdf link*
- Kandasamy *et. al.*, "Multi-fidelity optimization of high-speed foil-assisted catamaran for low wake," J. Marine Science and Technology, Vol. 16, No. 2, pp. 143–156, 2011 *pdf link*
- Kandasamy *et. al.*, "Optimization of water-jet propelled high speed ships," 11th Int. Conf. on Fast Sea Transportation, Hawaii, 2011 *pdf link*
- Chen, X., Diez, M., Kandasamy, M., *et. al.*, "High-fidelity global optimization of shape design by dimensionality reduction, meta-models and deterministic particle swarm," Engineering Optimization, Vol. 47, No. 4, pp. 473-494, 2015 *pdf link*
- Campana, E., Peri, D., Tahara, Y., Kandasamy, M., and Stern, F., "Optimal ship design algorithms and their application to industrial problems," Society of Naval Architects and Marine Engineers - Transactions, Vol. 117, 2009 *pdf link*

Computational Model Development, Quality Control, Verification and Validation

- Kandasamy *et. al.*, "CFD validation studies for a high-speed foil-assisted semi-planing catamaran," J. Marine Science and Technology, Vol. 16, No. 2, pp. 157–167, 2011 *pdf link*
- Kandasamy *et. al.*, "Integral force/moment waterjet model for CFD simulations," ASME J. Fluids Engineering, Vol. 132, 2010 *pdf link*
- Takai, T., Kandasamy, M., et. al., "Verification and validation study of URANS simulations for axial water-jet propelled large high-speed ship," Journal of Marine Science and Technology, Volume 16, Number 4, pp. 434-447, 2011 *pdf link*
- Stern, F., Carrica, P., Kandasamy, M., et, al., "Computational Hydrodynamic Tools for High-Speed Sealift," Transactions SNAME, Vol. 114, pp. 55–81, 2006 *pdf link*

Design Evaluation and Root Cause Analysis

- Kandasamy *et. al.*, "Unsteady free-surface wave-induced separation: coherent vortical structures and instabilities," Journal of Fluid & Structures, Vol. 25, pp. 343–363, 2009 *pdf link*
- Castiglione, T., He, W., Kandasamy, M., and Stern, F., "Numerical analysis of the interference effects on resistance, sinkage and trim of a fast catamaran," Journal of Marine Science and Technology, Vol. 20, No. 2, pp. 292-308, 2015 *pdf link*
- Castiglione, T., Stern, F., Bova, S., and Kandasamy, M., "Numerical investigation of the sea-keeping behavior of a catamaran in regular head waves," Ocean Engineering, Vol. 38, pp. 1806–1822, 2011 *pdf link*