# V M Krushnarao Kotteda

Dept. 3295, 1000 E University Ave, # 2019, Laramie, WY−82071-2000

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## Education

**PhD, Aerospace Engineering, 9.0/10.0,** Indian Institute of Technology (IIT) Kanpur                                2016
    Title: Computation of flow in supersonic intakes and nozzles ; Advisor: Prof. Sanjay Mittal
**Masters, Aerospace Engineering, 7.75/10.0,** IIT Kanpur                                2009
**Bachelors, Mechanical Engineering, 78.92/100.0,** Andhra University, Visakhapatnam                                2007

## Professional Experience

- **Postdoctoral Research Associate**, Department of Mechanical Engineering, University of Wyoming          11/2018 - Present
  Mentor: Dr. M Stoellinger
  Designed and implemented advanced spectral models for thermal radiation in multiphase flows
  Developing and applying advanced numerical solution methods for the radiative heat transfer equation such as the Photon-Monte Carlo Method for multiphase reacting flows

- **Postdoctoral Researcher** , Department of Mechanical Engineering, The University of Texas at El Paso (UTEP)          01/2016 – 11/2018
  Mentor: Dr. V Kumar; Co-mentor: Dr. W Spotz
  Strong mathematical fundamentals, including linear algebra and numerical methods
  Develop artificial intelligence and machine learning techniques for classification and regression of engineering problems
  Design and implement an interface to integrate a legacy multiphase flow solver (which is written in FORTRAN) with an object-oriented next-generation framework - Trilinos
  Test the performance of the iterative methods in the integrated solver
  Improve the performance portability of the linear solvers in the legacy code
  Carry out computations on high performance/hybrid multi-petascale computing machines

- **Guest Researcher**, Sandia National Laboratories, Albuquerque          05/2018 – 07/2018
  Mentor: Dr. W Spotz, Co-mentor: Dr. D Sunderland
  Improved the portability of MFiX-Trilinos via Kokkos
  Tested the performance of the integrated solver on various XSEDE computational resources (Xeon Phi, and Kepler and Pascal GPUs)
  Analyzed the performance portability of various preconditioned linear solvers

- **Guest Researcher** , Sandia National Laboratories, Albuquerque          06/2017 – 08/2017
  Mentor: Dr. W Spotz
  Tested the performance of the integrated solver on various computer supercomputers (Haswell)
  Analyzed the performance of various first and second-generation preconditioned linear solvers in Trilinos

- **Guest Researcher** , Sandia National Laboratories, Albuquerque          06/2016 – 08/2016
  Mentor: Dr. W Spotz
  Developed an interface to integrate the software or the libraries written in two different programming languages

- **Research Scholar** , Department of Aerospace Engineering, IIT Kanpur          01/2008 – 01/2016
  Advisor: Dr. S Mittal
  Developed a higher order turbulent compressible flow solver based on a stabilized finite element formulation with 6-noded triangular and 18-noded wedge element interpolation functions
  Developed the in-house code with FORTRAN, C, and MPI
  Implemented one equation turbulence model in the compressible flow solver
  Completed simulation verification, model validation, and documentation
  Analyzed instabilities in supersonic air-breathing engines and asymmetric flow in a planar convergent-divergent nozzle

## Skills

- 10+ years of experience in using parallel Linux computing platforms, parallel job submission scripts, common software repository tools, and parallel visualization software
- Experience in using common multiphase CFD methods, such as Volume of Fluid (VOF) and Eulerian-Eulerian/Lagrangian methods
- Background in FORTRAN, C and C++ applied programming and knowledge of Python and bash scripting languages
- Proficiency with Git version control
- Experience in software verification  validation (VV) and scalability optimization on HPCs
- Experience in scientific machine learning (ML) deployment and validation.
- Experience in FEM framework-based code development

- Experience in CFD-DEM method coding and modeling
- Ability to work independently and in a team environment, thoroughly document work performed
- Excellent written and oral communication skills

# Scholarly Contributions and Creative Productions

### Peer-reviewed Original Research Journal Articles (*corresponding author)

J13. *VMK Kotteda\**, A Stephens, W Spotz, V Kumar, and A Kommu, Uncertainty quantification of fluidized beds using a data-driven framework, **Powder Technology** 354, 709-718 (2019).

J12. *VMK Kotteda\**, A Schiaffino, A Chattopadhyay, S Sanjay, V Kumar, and A Bronson, Sensitivity of Viscosity on Molten Ti Infusion into a B4C Packed-Bed at the Microscopic Scale, **Metallurgical and Materials Transaction B** 50, 4:1559–1565 (2019).

J11. D Lozano, *VMK Kotteda\**, VS Rao Gudimetla, and V Kumar, Implementing Artificial Intelligence in predicting metrics for characterizing laser propagation in atmospheric Turbulence, **Journal of Fluid Engineering** 141, 121401-121408 (2019).

J10. P Delgado, *VMK Kotteda\**, and V Kumar, Hybrid Fixed-Point Fixed-Stress Splitting Method for Linear Poroelasticity, **Geosciences** 9, 29–43 (2019).

J9. S Behara\*, V Chandra, B Ravikanth, and *VMK Kotteda*, Oscillation responses and wake modes of three staggered rotating cylinders in two- and three-dimensional flows, **Physics of Fluids** 30, 103602 (2018).

J8. *VMK Kotteda\**, V Kumar, and W Spotz, Performance of preconditioned iterative solvers in MFiX-Trilinos for fluidized beds, **Journal of Supercomputing** 74, 8:4104-4126 (2018).

J7. *VMK Kotteda*, and S Mittal\*, Flow in a planar convergent-divergent nozzle, **Shock waves** 27, 441-455 (2017).

J6. S Mittal\*, G Chopra, M Furquan, Navrose, *VMK Kotteda*, and V Bhatt, Finite Element Computations of Complex Flows, **Proceedings of the Indian National Science Academy** 82, 2:385-394 (2016).

J5. *VMK Kotteda*, and S Mittal\*, Flow in a Y-intake at supersonic speeds, **Journal of Propulsion and Power** 32, 171-187 (2016).

J4. *VMK Kotteda*, and S Mittal\*, Instabilities in air intakes of supersonic air vehicles, **Directions,** IIT Kanpur, (2015).

J3. *VMK Kotteda*, and S Mittal\*, Computation of turbulent flow in a mixed compression intake, **International Journal of Advances in Engineering Sciences and Applied Mathematics** 6, 126-141 (2014).

J2. *VMK Kotteda*, and S Mittal\*, Stabilized finite element computation of compressible flow with linear and quadratic interpolation functions, **International Journal for Numerical Methods in Fluids** 75, 273–294 (2014).

J1. *VMK Kotteda*, and S Mittal\*, Viscous flow in a mixed compression intake, **International Journal for Numerical Methods in Fluids** 67, 1393–1417 (2011).

## Forthcoming Publications

F2. C Harris, VMK Kotteda, SS Kumar, V Kumar, and A Bronson, 'An Analysis of the Effect of Contact Angle on the Liquid Metal Infusion into a Packed Bed', 2020.

F1. *VMK Kotteda*, and M Stoellinger, 'Evaluation of the gray and non-gray weighted sum of gray gases models for dry and wet flue gas conditions', 2020.

## Book Chapter

B1. *VMK Kotteda*, and S Mittal, "Finite element computation of buzz instability in supersonic air intakes", Advances in Computational Fluid-Structure Interaction and Flow Simulation (**Birkhäuser**, Cham, 2016), Yuri Bazilevs & Kenji Takizawa, eds.

## Peer-reviewed Proceedings/Transactions (*presenting author*)

C21. *VMK Kotteda\**, A Kommu, and V Kumar, Characterization of Flow Regimes In Gas-Solid Fluidized Beds Via a Data-Driven Framework, **ASME 2020 Fluids Engineering Division Summer Meeting**, July 12 - 16, 2020, Orlando, FL, USA, .

C20. A Rodriguez, *VMK Kotteda\**, LF Rodriguez, V Kumar, JA Munoz, Trilinos Solvers Scalability on A MFiX-Trilinos Framework Applied To Fluidized Bed Simulations, **ASME 2020 Fluids Engineering Division Summer Meeting**, July 12 - 16, 2020, Orlando, FL, USA, .

C19. A Rodriguez, CR Cuellar, LF Rodriguez, A Garcia, VSRao Gudimetla, *VMK Kotteda\**, JA Munoz, and V Kumar, Stochastic Analysis of LES Atmospheric Turbulence Solutions with Generative Machine Learning Models, **ASME 2020 Fluids Engineering Division Summer Meeting**, July 12 - 16, 2020, Orlando, FL, USA, .

C18. *VMK Kotteda\**, A Badhan, and V Kumar, Parametric Optimization of a Dry Powder Inhaler, **ASME 2020 Fluids Engineering Division Summer Meeting**, July 12 - 16, 2020, Orlando, FL, USA, .

C17. V Kumar\*, J Terrazas, R Edmonds, and *VMK Kotteda*, Multiphase CFD Modeling of the Braking Phenomena for the Holloman High-Speed Test Track, **23rd AIAA International Space Planes and Hypersonic Systems and Technologies Conference**, March 10-12, 2020, Montréal, Québec, Canada, .

C16. *VMK Kotteda\**, A Kommu, and V Kumar, A data-driven framework for uncertainty quantification of a fluidized bed, **IEEE High Performance Extreme Computing Conference**, Sep 24-26, 2019, Waltham, MA, USA, Vol. 1, p. 1-7.

C15. A Badhan, *VMK Kotteda\**, and V Kumar, CFD DEM Analysis of a Dry powder Inhaler, **AJKFluids ASME - JSME - KSME Joint Fluids Engineering Conference**, Jul 28-Aug 1, 2019, San Francisco, CA, USA, Vol.1, p. V002T02A003-11.

C14. *VMK Kotteda\**, A Kommu, V Kumar, and W Spotz, Uncertainty quantification of a fluidized bed reactor, **AJKFluids ASME - JSME - KSME Joint Fluids Engineering Conference**, Jul 28-Aug 1, 2019, San Francisco, CA, USA, Vol. 59087, p. V005T05A051-61.

C13. A Schiaffino, *VMK Kotteda\**, V Kumar, A Bronson, and SS Kumar, Uncertainty Quantification of Molten Hafnium Infusion Into A B4C Packed-Bed, **AJKFluids ASME - JSME - KSME Joint Fluids Engineering Conference**, Jul 28-Aug 1, 2019, San Francisco, CA, USA, Vol. 59032, p. V002T02A041-46.

C12. J Terrazas, *VMK Kotteda\**, V Kumar, R Edmonds, and M Zeisset, The CFD Modeling of the Water Braking Phenomena for the Holloman High-Speed Test Track, **AJKFluids ASME - JSME - KSME Joint Fluids Engineering Conference**, Jul 28-Aug 1, 2019, San Francisco, CA, USA, Vol. 59025, p. V001T01A053.

C11. *LF Rodriguez\**, V Kumar, J Espiritu, VMK Kotteda, D Lozano, and A Rodriguez, Branch and Bound Analysis To Characterize Phase Variations In Laser Propagation Through Deep Turbulence, **AJKFluids ASME - JSME - KSME Joint Fluids Engineering Conference**, Jul 28-Aug 1, 2019, San Francisco, CA, USA, Vol. 59032, p. V002T02A080.

C10. VMK Kotteda\*, V Kumar, and *W Spotz*, Performance portability of a fluidized bed solver, **IEEE High Performance Extreme Computing Conference**, Sep 25-27, 2018, Waltham, MA, USA, Vol. 1, p. 1-7.

C9. *J Contreras-Serna*, A Schiaffino, VMK Kotteda\*, A Garcia-Cuellar, and V Kumar, Numerical simulation of the formation of melt jets in melt-coolant interactions, **ASME 5th Joint US-European Fluids Engineering Summer Conference**, Jul 15-20, 2018, Le Centre Sheraton Montreal, Montreal, Quebec, Canada, Vol. 1, p. V002T09A019-26.

C8. D Lozano, VMK Kotteda\*, VSRao Gudimetla, and *V Kumar*, Implementing Artificial Intelligence in predicting metrics for characterizing laser propagation in atmospheric Turbulence, **ASME 5th Joint US-European Fluids Engineering Summer Conference**, Jul 15-20, 2018, Le Centre Sheraton Montreal, Montreal, Quebec, Canada, Vol. 1, p. 1-8.

C7. *A Rodriguez*, VMK Kotteda\*, LF Rodriguez, V Kumar, A Schiaffino, and Z Nieto, Machine Learning Approach to Predict the Flow Rate for an Immiscible Two-Phase Flow at Pore Scale for Enhanced Oil Recovery Application, **ASME 5th Joint US-European Fluids Engineering Summer Conference**, Jul 15-20, 2018, Le Centre Sheraton Montreal, Montreal, Quebec, Canada, Vol.1, p. V002T09A003-14.

C6. *A Schiaffino*, VMK Kotteda\*, A Bronson, S Shantha, and V Kumar, Predicting The Depth Of Penetration Of Molten Metal Into A Pore Network Using Tensorflow, **ASME 5th Joint US-European Fluids Engineering Summer Conference**, Jul 15-20, 2018, Le Centre Sheraton Montreal, Montreal, Quebec, Canada, Vol. 1, p. V002T09A018-24.

C5. Z Nieto, VMK Kotteda\*, *A Rodriguez*, S Shantha, V Kumar, and A Bronson, Utilization of machine learning to predict the surface tension of molten metals and alloys, **ASME 5th Joint US-European Fluids Engineering Summer Conference**, Jul 15-20, 2018, Le Centre Sheraton Montreal, Montreal, Quebec, Canada, Vol. 1, p. V003T21A003-09.

C4. *A Schiaffino\**, A Chattopadhyay, ST Hossain, VMK Kotteda, V Kumar, and A Bronson, Computational Study of High-Temperature Liquid Metal Infusion, **ASME 2017 Fluids Engineering Division Summer Meeting**, Jul 31-Aug 3, 2017, Waikoloa, Hawaii, USA, Vol. 1, p. V01AT04A013-19.

C3. *VMK Kotteda\**, A Chattopadhyay, V Kumar, and W Spotz, Next generation multiphase flow solver for fluidized bed applications, **ASME 2017 Fluids Engineering Division Summer Meeting**, Jul 31-Aug 3, 2017, Waikoloa, Hawaii, USA, Vol. 1, p. V01CT16A013-21.

C2. VMK Kotteda\*, *A Chattopadhyay*, V Kumar, and W Spotz, A framework to integrate MFiX with Trilinos for high fidelity fluidized bed computations, **IEEE High-Performance Extreme Computing Conference**, Sep 13-15, 2016, Waltham, MA USA, Vol. 1, p. 1-6.

C1. *A Chattopadhyay*, VMK Kotteda\*, V Kumar, and W Spotz, Next generation exascale capable multiphase solver with Trilinos, **ASME international Mechanical Engineering Congress & Exposition**, Nov 11-17, 2016, Phoenix, Arizona, USA, Vol. 1, p. V014T07A025-31.

## Conference/Workshop/Symposium/Meeting abstracts (*presenting author*)

A29. *A Rodriguez*, C R Cuellar, LF Rodriguez, A Garcia, VMK Kotteda, VSR Gudimetla, V Kumar, J Munoz, Simulation of atmospheric turbulence with generative machine learning models, **72nd Annual American Physical Society Division of Fluid Dynamics Meeting**, March 2-6, 2020, Denver, CO, USA.

A28. *A Rodriguez*, C Cuellar, LF Rodriguez, VMK Kotteda, V Kumar, J Munoz, Simulation Of Atmospheric Turbulence With Long Short-Term Memory Neural Networks, **25th Joint UTEP/NMSU Workshop on Mathematics, Computer Science, and Computational Sciences**, Nov 2, 2019, El Paso, TX, USA.

A27. *VMK Kotteda*, and M Stoellinger, A thermal radiation model for numerical simulation of reacting fluidized beds with MFiX-TFM, MFiX-DEM and MFiX-PIC, **National Energy Technology Laboratory's (NETL) 2019 Workshop on Multiphase Flow Science**, Aug 6 -8, 2019, Morgantown, WV, USA.

A26. V Kumar, *VMK Kotteda*, and A Badhan, CFD DEM analysis of a DPI with containerized MFiX on Cloud, **NETL 2019 Workshop on Multiphase Flow Science**, Aug 6 -8, 2019, Morgantown, WV, USA.

A25. *VMK Kotteda*, D Tobin, and M Stoellinger, Implementing General Framework in MFiX for Radiative Heat Transfer in Gas–Solid Reacting Flows, **2019 Annual Project Review Meeting for Crosscutting, Rare Earth Elements, Gasification and Transformative Power Generation.**, Apr 9-11, 2019, Pittsburgh, PA, USA.

A24. B Roman, SA Kumar, B Joddar, *VMK Kotteda*, and V Kumar, A numerical analysis of interactions between different collagen I:III ratios and cardiomyocytes, **AJKFluids ASME - JSME - KSME Joint Fluids Engineering Conference**, Jul 28-Aug 1,2019, San Francisco, CA, USA.

A23. VMK Kotteda, *V Kumar, and W Spotz*, Dakota Integrated with MFiX for UQ Analysis: Sensitivity of particle size on pressure in a fluidized bed DEM simulations, **NETL 2018 Workshop on Multiphase Flow Science**, Aug 7 -9, 2018, Houston, TX, USA.

A22. *V Kumar*, A Rodriguez, and VMK Kotteda, Towards Exascale Simulations: Data-driven and predictive analysis framework for a legacy multiphase solver with Trilinos, Dakota, & Tensorflow, **Sandia National Laboratory**, Jul 2 2018, Albuquerque, NM, USA.

A21. *A Rodriguez*, Z Nieto, A Schiaffino, L Rodriguez, VMK Kotteda, J A Muñoz, and V Kumar, Artificial Intelligence Approach To Predict The Physics For An Immiscible Two-phase Flow At Pore Scale For Enhanced Oil Recovery, **Sandia National Laboratory Fire Science and Technology Department Symposium**, Jun 2018, Albuquerque, NM, USA.

A20. VMK Kotteda, *V Kumar, W Spotz*, A Rodriguez, A Schiaffino, and A Chattopadhyay, MFiX Integrated with Trilinos: First and second generation preconditioned linear solvers performance analysis, **NETL 2018 Workshop on Multiphase Flow Science**, Aug 7 -9, 2018, Houston, TX, USA.

A19. ST Hussain, A Chattopadhyay, *A Schiaffino*, VMK Kotteda, and V Kumar, Optimization of Micro-Pillar Wick Structured Cooler by using an Exa-scale Pore Network Simulator, **2018 Rice oil and gas high-performance computing**, Mar 12-13, 2018, Rice University, Houston, TX.

A18. VMK Kotteda, and *V Kumar*, Effect of air-fuel ratio on biomass gasification, **44th National Conference on Fluid Mechanics and Fluid Power**, Dec 14-16, 2017, Amrita University, Kollam.

A17. *VMK Kotteda, V Kumar,*, and W Spotz, Trilinos Linear Solver integrated in MFiX, a Fortran based Multiphase Solver from NETL, **Trilinos User-Developer Group meeting 2017**, Oct 23-26, 2017, CSRI Sandia National Laboratory, Albuquerque, NM, USA.

A16. VMK Kotteda, *V Kumar, W Spotz*, A Rodriguez, A Schiaffino, and A Chattopadhyay, Linear Solver Performance Analysis of MFiX Integrated with a Next Generation Computational Framework, **NETL 2017 Workshop on Multiphase Flow Science**, Aug 8 -10, 2017, Morgantown, WV, USA.

A15. *A Rodriguez*, A Schiaffino, A Chattopadhyay, VMK Kotteda, W Spotz, and V Kumar, High-Performance Computing with a Focus on Measuring the Scalability of the Problem Guided by the Development of New Algorithms from an MFiX Framework to MFiX-Trilinos Framework, **Southwest Emerging Technology Symposium 2017**, Apr 1, 2017, Wyndham Airport Hotel, El Paso, TX, USA.

A14. *A Schiaffino*, VMK Kotteda, and V Kumar, Next Generation Solvers with Trilinos, **Southwest Emerging Technology Symposium**, Apr 1, 2017, Wyndham Airport Hotel, El Paso, TX, USA.

A13. *ST Hossain, A Chattopadhyay*, VMK Kotteda, W Spotz, and V Kumar, Extracting High Fidelity Heat Transfer Physics for Micro-Pillar Wick Structures through an In-House Exa-Scale Pore-Network Simulator, **Southwest Emerging Technology Symposium 2017**, Apr 1, 2017, Wyndham Airport Hotel, El Paso, TX, USA.

A12. *A Chattopadhyay*, V Kumar, VMK Kotteda, and W Spotz, Leveraging Trilinos's Next Generation Computing Framework for an Exa-Scale Poro-Elastic Network Simulator Implementation, **IEEE High Performance Extreme Computing Conference**, Sep 13-15, 2016, Waltham, MA USA.

A11. *VMK Kotteda*, A Chattopadhyay, V Kumar, and W Spotz, MFiX integrated with Trilinos for High Fidelity Multiphase Flow Simulations, **NETL 2016 Workshop on Multiphase Flow Science**, Aug 9-10, 2016, Morgan town, WV, USA.

A10. *VMK Kotteda*, A Chattopadhyay, V Kumar, and W Spotz, High Fidelity Computational Model for Simulating Large Scale Multiphase Flow Problems, **4th Annual IDR Symposium**, Apr 25, 2016, The University of Texas at El Paso, El Paso, USA.

A9. *A Chattopadhyay*, VMK Kotteda, and V Kumar, Next Generation Computing Framework for Exascale Simulations, **Southwest Emerging Technology Symposium 2016**, Apr 9, 2016, Wyndham Airport Hotel, El Paso, TX, USA.

A8. *VMK Kotteda*, and S Mittal, Numerical simulation of viscous flow in a twin intake, **2nd National Propulsion Conference**, Feb 23-24, 2015, IIT Bombay, India.

A7. *VMK Kotteda*, and S Mittal, Viscous flow in a twin intake at supersonic speeds, **Aerospace Engineering Doctoral Students Symposium**, May 12-13 2014, IIT Kanpur, India.

A6. *VMK Kotteda*, and S Mittal, Our CFD efforts on understanding buzz in mixed compression intakes, **Symposium on Air Intake for Airspace Vehicles**, Mar 2013, DIAT Pune, India.

A5. *VMK Kotteda*, and S Mittal, Flow in a mixed compression intake with linear and quadratic elements, **15th AeSI Annual CFD Symposium**, Aug 9-10, 2013, IISc Bangalore, India.

A4. *VMK Kotteda*, Navrose, Sidharth GS, and S Mittal, Finite element simulations of fluid flows, **Symposium on HPC Applications**, Mar 2012, IIT Kanpur, India.

A3. *VMK Kotteda*, and S Mittal, Finite element computations of compressible flows using linear and quadratic interpolation functions, **13th AeSI Annual CFD Symposium**, Aug 11-12 2011, IISc Bangalore, India.

A2. *VMK Kotteda*, and S Mittal, Finite element computation of compressible flows using conservative variables, **16th International Conference on Finite Elements in Flow Problems (FEF2011)**, Mar 23-25, 2011, Munich, Germany.

A1. VMK Kotteda, and *S Mittal*, Viscous Flow in a Mixed Compression Intake, **8th Asian Computational Fluid Dynamics Conference**, Jan 10-14, 2010, Hong Kong, China.

### Technology

- **VMK Kotteda**, D Tobin, and M Stoellinger, *Implementing General Framework in MFiX for Radiative Heat Transfer in Gas-Solid Reacting Flows*

- **VMK Kotteda**, V Kumar, W Spotz, A Rodriguez, A Schiaffino, and A Chattopadhyay, *High Fidelity Computational Model for Fluidized Bed Experiments*

- A Bronson, V Kumar, S Sanjay, **VMK Kotteda**, A Schiaffino, and A Chattopadhyay, *High Temperature Melt Infusion into a B4C-Packed Bed*

- **VMK Kotteda**, and S Mittal, *Numerical Simulation of Instabilities in Supersonic Flow in Y-duct Air Intakes*

- **VMK Kotteda**, and S Mittal, *Numerical Simulation of Buzz in Supersonic Mixed Compression Air Intakes*

# Service and Honors

- Received **travel support** from College of Engineering, UTEP to present my work at ASME-FEDSM 2017

- Received **foreign travel grant** from Council of Scientific and Industrial Research to present my work at FEF2011

- Received **cash award** from IIT Kanpur for publishing papers in reputed journals                2010, 2014

- Awarded Ministry of Human Resource Development **fellowship**                2007-2015

- Awarded **gold medal** for best academic performance in the tenth grade                2000

- **Hosted Extreme Science and Engineering Discovery Environment (XSEDE) workshops** at UTEP
  Big data - May 01-02, 2018; Message Passing Interface - April 03-04, 2018; OpenMP - Mar 06, 2018, Big data - Feb 07-08, 2018; OpenMP - Jan 09, 2018; Big data - Dec 05-06, 2017 ; GPU programming - Nov 07, 2017; Message Passing Interface - Oct 03-04, 2017; Big data - Sep 12-13, 2017 ; OpenMP - Aug 15, 2017

- **Journal Peer Reviewer**
  Physics of Fluids; Applied Energy ; Applied Sciences; Processes; Metallurgical and Materials Transactions B; Mathematics; Mathematical and Computational Applications; International Journal of Mechanical Engineering and Applications; Computation; Data; Fluids; Aerospace; Big Data and Cognitive Computing; Songklanakarin Journal of Science and Technology

- **Conference/Meeting Peer Reviewer**
  | | |
  |---|---|
  | ASME Fluids Engineering Division Summer Meeting, Fluid Machinery Track | 2020 |
  | AJKFluids ASME - JSME - KSME Joint Fluids Engineering Conference | 2019 |
  | ASME Fluids Engineering Division Summer Meeting | 2018 |
  | ASME Fluids Engineering Division Summer Meeting | 2017 |
  | ASME International Mechanical Engineering Congress & Exposition | 2017 |

- **Session Chair**
  | | |
  |---|---|
  | Graduate Student Research Expo | 2018 |
  | Southwest Emerging Technology Symposium | 2017 |
  | Graduate Student Research Expo | 2017 |

- **Organizing Committee Member**
  | | |
  |---|---|
  | Building STEM Pathways for Students with Disabilities | 2018 |
  | Aerospace Engineering Doctoral Students Symposium | 2014 |
  | IUTAM Symposium on Bluff Body Flows (blubof2011) | 2011 |

# Professional Affiliations/Memberships

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|---|---|
| American Society of Mechanical Engineers (ASME) | 2016-Present |
| American Institute of Aeronautics and Astronautics (AIAA) | 2019-Present |
| American Mathematical Society (AMS) | 2020 |
| National Postdoctoral Association | 2016-Present |