

Debanjan Mukherjee, Ph.D.

✉ debanjan@Colorado.Edu

🌐 <https://www.flowphysicslab.com/>

☎ 510-280-4915/303-735-8368

📍 ECME 275, Engineering Center
University of Colorado Boulder

Education

- 2010 – 2013 **Ph.D. Mechanical Engineering**, University of California, Berkeley
Dissertation: *Discrete Particle Simulation Techniques for the Analysis of Colliding and Flowing Particulate Media*. Advisor: Prof. Tarek I. Zohdi.
- 2008 – 2010 **M.S. Mechanical Engineering**, University of California, Berkeley
Dissertation: *Computational Design and Modeling of the Dynamics of Floating Ocean Wave Energy Converters*. Advisor: Prof. Alaa E. Mansour.
- 2004 – 2008 **B.Tech. Ocean Engineering**, Indian Institute of Technology, Madras
Thesis: *CFD Simulations of Wave Resistance on Twin-Hull Catamarans*. Advisor: Prof. P. Krishnankutty.

Awards and Honors

- 2024 **Research and Innovation Office Faculty Fellow**, 2025 Cohort, University of Colorado Boulder.
- 2021 **2021 Cohort of Pandemic Hyper-accelerator for Science and Technology (PHAST)** for pandemic related research and innovation, Venture Partners, University of Colorado Boulder. (*declined*)
- 2020 **National Institutes of Health 2020 Trailblazer Award** for new and early stage investigators.
Oak Ridge Associated Universities (ORAU) 2020 Ralph E. Powe Junior Faculty Enhancement Award.
- 2019 **University of Colorado Boulder Mechanical Engineering Outstanding Graduate Educator Award 2019** for contributions towards developing a new computational fluid dynamics course.
- 2018 **Journal Cover Feature: Annals of Biomedical Engineering: August 2018 issue: publication “The Role Of Circle of Willis Anatomy in Cardio-embolic Stroke-A Patient-specific Simulation Based Study”**.
Recipient: Insight Health Data Science Fellowship Award, January 2018 (*declined*)
- 2016 **Best Poster Award: 5th International Conference on Engineering Frontiers in Pediatric and Congenital Heart Disease (3rd place in Young Investigator Competition)**.
- 2014 **Best Poster Award: Society of Petroleum Engineers (SPE) International Oilfield Corrosion Conference and Exhibition**.
- 2013 **Selected as Institute Fellow for the ‘Summer Institute for Preparing Future Faculty’ by the Graduate Division, University of California, Berkeley**.
- 2011 **Outstanding Graduate Student Instructor Award: Graduate Introduction to Finite Element Analysis**.
- 2010 **Best Paper Award: 29th International Conference on Ocean & Offshore, and Arctic Engineering**.
Outreach for Engineers Specialty Forum Scholarship by ASME-IPTI for the International Conference on Ocean & Offshore, and Arctic Engineering.
Allen D. Wilson Memorial Scholarship by the Department of Mechanical Engineering, University of California, Berkeley.
Renewable Energy Scholarship Award by the Berkeley Energy & Resources Collaborative (BERC).
- 2009 **Block Grant Award by the Department of Mechanical Engineering, University of California, Berkeley**.
- 2002 **Student delegate at the “CSIR Programme for Youth Leadership in Science 2002” by the Council of Scientific and Industrial Research (CSIR), Government of India**.

Professional Experience

- 2019 – present **Assistant Professor**, Mechanical Engineering, University of Colorado Boulder
Program Faculty, Biomedical Engineering Program, University of Colorado Boulder
Faculty Council Member, BioFrontiers Institute, University of Colorado Boulder
- 2018 – 2019 **Visiting Assistant Professor**, Mechanical Engineering, University of Colorado Boulder

Professional Experience (continued)

- 2014 – 2018 **Postdoctoral fellow**, University of California Berkeley
Cardiovascular fluid mechanics; Supervisor: Prof. Shawn C. Shadden
American Heart Association Postdoctoral Fellowship (01/2016 – 12/2018)
- 2013 – 2013 **Assistant Specialist Researcher**, University of California, Berkeley
Research in magnetic particle flows; Supervisor: Prof. Tarek I. Zohdi
- 2007 – 2007 **Engineering Intern**, Larsen & Toubro Ltd., Mumbai, India
Undergraduate engineering intern; Heavy engineering division
- 2006 – 2006 **Engineering Intern**, M/s Goa Shipyard Ltd., Vasco da Gama, Goa, India
Undergraduate engineering intern; Planning, production, and technical services division

Research Interests

- **Biomedical:** Image-based modeling for biofluids and biomechanics; Hemodynamics and vascular transport processes; Cerebrovascular flow; Cardiovascular diseases – stroke, thrombosis, embolisms; Cardiovascular biomedical device design; Biomedical image processing; Drug delivery; Infection transmission & control.
- **Computational:** Computational fluid dynamics and transport processes; Fluid-particle and Fluid-structure interaction; Multiscale modeling; Infectious disease transmission modeling; Finite element method; Discrete element method; Molecular Dynamics; High-performance computing.
- **Flow Physics:** Multiphase and particle-laden flows; Granular flows/dynamics; Collective dynamics of particle systems; Statistical physics of particle dynamics and transport; Particulate flows in industrial and manufacturing systems.

Research Publications

Patents

- 2020 **“Rapid Non-invasive Detection of Respiratory Diseases.”** Sinha, M., Sen, C., Gulati, I., and **Mukherjee, D.** U.S. Provisional Pat. Ser. No. 63/060875, Filed August 04, 2020.
Patent Cooperation Treaty (PCT) application filed August 2, 2021

Peer-Reviewed Journal Publications

- 2024 **Venkatesh, S., Teeraratkul, C., Rovito, N., Mukherjee, D., and Lynch, M.E.** High-Fidelity Computational Fluid Dynamics Model To Simulate Perfusion Through A Bone-Mimicking Scaffold. *Computers in Biology and Medicine* (accepted, in press).
- **Zablah, J.E., Shorofsky, M.J., Cao, K., and Mukherjee, D.** Computational Fluid Dynamic Assessment of Patients with Congenital Heart Disease from 3D Rotational Angiography. *Pediatric Cardiology*. (accepted, in press).
- **Mukherjee, D., Lai, V., Huang, Z., and Singh, A.** The BIORES-21 Survey: Insights Into Remote And Online Education In Biomechanics And Mechanobiology. *Journal of Biomechanical Engineering*. 146(5):051006. 2024.
- **Gutierrez, N.G.*, Mukherjee, D.*, and Bark, D.*** Decoding Hemostasis and Thrombosis Through Code: A Computational Modeling Review. *Journal of Thrombosis and Haemostasis*. 22(1):35–47. 2024.
[*Invited review: all authors contributed equally]
- **Teeraratkul, C., Tomaiuolo, M., Stalker, T.J., and Mukherjee, D.** Investigating Clot-flow Interactions By Integrating Intravital Imaging With In Silico Modeling For Analysis Of Flow, Transport, And Hemodynamic Forces. *Scientific Reports*. 14(1):696. 2024.
[author preprint: bioRxiv: <https://doi.org/10.1101/2023.06.03.543557>]
- 2023 **Roopnarinesingh, R., Leppert, M., and Mukherjee, D.** Evidence And Mechanisms For Embolic Stroke In Contralateral Hemispheres From Carotid Artery Sources. *Journal of the American Heart Association*. 12(23):e030792. 2023.
[author preprint: medRxiv: <https://doi.org/10.1101/2023.04.20.23288892>]

Research Publications (continued)

- Sahni, A., McIntyre, E.E., Cao, K., Pal, J.D., and **Mukherjee, D.** The Relation Between Viscous Energy Dissipation And Pulsation For Aortic Hemodynamics Driven By A Left Ventricular Assist Device. *Cardiovascular Engineering and Technology*. 14:560–576. 2023.
[author preprint: medRxiv: <https://doi.org/10.1101/2022.07.12.22277566>]
- Sahni, A., McIntyre, E.E., Pal, J.D., and **Mukherjee, D.** Quantitative Assessment Of Aortic Hemodynamics For Varying Left Ventricular Assist Device Outflow Graft Angles And Flow Pulsation. *Annals of Biomedical Engineering*. 51(6):1226–1243. 2023.
[author preprint: medRxiv: <https://doi.org/10.1101/2022.06.17.22276555>]
- 2022 ■ Jung, H., Kang, T., Lee, C.H., Woo, S.Y., Yang, S.S., **Mukherjee, D.**, Kim, D.I., and Ryu, J. Comparison Of Haemodynamics In Carotid Endarterectomy: Primary Closure Versus Patch Angioplasty. *Engineering Applications of Computational Fluid Mechanics*. 16(1):1601–1618. 2022. (open access).
- **Mukherjee, D.** and Wadhwa, G. A Mesoscale Agent Based Modeling Framework For Flow-mediated Infection Transmission In Indoor Occupied Spaces. *Computer Methods In Applied Mechanics & Engineering*. 401 (A): 115485. 2022.
[author preprint: medRxiv: <https://doi.org/10.1101/2022.05.20.22275409>]
- Kang, T., **Mukherjee, D.**, and Ryu, J. Hemodynamic Flow Characteristics At Stenosed Artery: Computational Analysis Of Progressive Unilateral Carotid Stenosis In Three-dimensional Patient-specific Aortic-cerebral Vasculature. *Physics of Fluids*. 34(6):061902–19. 2022.
- 2021 ■ **Mukherjee, D.**, and Barker, A. Using Simulation Based Active Learning Strategies For Teaching Biofluids Concepts. *Journal of Biomechanical Engineering*. 143(12):121011–6. 2021.
- Wilson, J., Miller, S., and **Mukherjee, D.** A Lagrangian Approach Towards Quantitative Analysis Of Flow-mediated Infection Transmission In Indoor Spaces With Application To SARS-COV-2. *International Journal of Computational Fluid Dynamics*. 35(9):727–742. 2021.
[author preprint: medRxiv: 2021.08.22.21262447]
- Kang, T., **Mukherjee, D.**, and Ryu, J. Numerical Investigation Of Carotid Stenosis In Three-dimensional Aortic-cerebral Vasculature: Pulsatility Index, Resistive Index, Time-to-peak Velocity, And Flow Characteristics. *Engineering Applications of Computational Fluid Mechanics*. 15(1):1645–1665 (open access). 2021.
- Teeraratkul, C., and **Mukherjee, D.** Microstructure Aware Modeling Of Biochemical Transport In Arterial Blood Clots. *Journal of Biomechanics*. 127:110692. 2021.
[author preprint: bioRxiv 2021.01.25.428179]
- Kang, T., **Mukherjee, D.**, Kim, J.M., Park, K.Y., and Ryu, J. Effects Of Progressive Carotid Stenosis On Cerebral Haemodynamics: Aortic-cerebral 3D Patient-specific Simulation. *Engineering Applications of Computational Fluid Mechanics*. 15(1):830–847. (open-access). 2021.
- Teeraratkul, C., Irwin, Z., Shadden, S.C., and **Mukherjee, D.** Computational Investigation Of Blood Flow And Flow-mediated Transport In Arterial Thrombus Neighborhood. *Biomechanics and Modeling in Mechanobiology*. 20:701–715. 2021.
[author preprint: bioRxiv 2020.06.11.147488]
- **Mukherjee, D.** Developing Effective Screencast Modules For Teaching Computational Techniques In Remote Modalities. *Biomedical Engineering Education* 1(2):307–311. 2021.
- 2020 ■ Miller, S., **Mukherjee, D.**, Wilson, J., Clements, N., and Steiner, C. Implementing A Negative-Pressure Isolation Space Within A Skilled Nursing Facility To Control SARS-CoV-2 Transmission. *American Journal of Infection Control*. 49(4):438–446. 2020.
[author preprint: medRxiv 2020.07.04.20143123]
- 2018 ■ **Mukherjee, D.**, Jani, N.D., Narvid, J., and Shadden, S.C. The Role Of Circle of Willis Anatomy In Cardio-embolic Stroke - A Patient-specific Simulation Based Study. *Annals of Biomedical Engineering*. 46(8):1128–1145. 2018.
**selected as journal cover feature for August 2018 issue of Annals of Biomedical Engineering*
[author preprint: bioRxiv-190579]
- **Mukherjee, D.**, and Shadden, S.C. Modeling Blood Flow Around A Thrombus Using A Hybrid Particle-Continuum Approach. *Biomechanics and Modeling in Mechanobiology*. 17(3):645–663. 2018.
- 2017 ■ **Mukherjee, D.**, and Shadden, S.C. Inertial Particle Dynamics In Large Artery Flows - Implications For Modeling Arterial Embolisms. *Journal of Biomechanics*. 52(8):155–164. 2017.

Research Publications (continued)

- Casas, G. *, **Mukherjee, D. ***, Celigueta, M.A., Zohdi, T.I., and Onate, E. A Modular, Partitioned, Discrete Element Framework For Industrial Grain Distribution Systems With Rotating Machinery. *Computational Particle Mechanics*. 4(2):181-198. 2017.
[*Authors contributed equally]
- 2016 ■ **Mukherjee, D.**, Jani, N., Selvaganesan, K., Weng, C.L., and Shadden, S.C. Computational Assessment Of The Relation Between Embolism Source And Embolus Distribution To The Circle Of Willis For Improved Understanding Of Stroke Etiology. *Journal of Biomechanical Engineering*. 138(8):081008-081008-13. 2016.
- 2015 ■ **Mukherjee, D.**, Padilla, J., and Shadden, S.C. Numerical Investigation Of Fluid-particle Interactions For Embolic Stroke. *Theoretical and Computational Fluid Dynamics*. 30(1):23-39. 2015.
- **Mukherjee, D.**, and Zohdi, T.I. A Discrete Element Based Simulation Framework To Investigate Particulate Spray Deposition Processes. *Journal of Computational Physics*. 290:298-317. 2015.
- **Mukherjee, D.**, and Zohdi, T. I. Computational Modeling Of The Dynamics And Interference Effects Of An Erosive Granular Jet Impacting A Porous, Compliant Surface. *Granular Matter*. 17(2):231-252. 2015.
- **Mukherjee, D.**, Zaky, Z., Zohdi, T.I., Salama, A., and Sun, S. Investigation Of Guided Particle Transport For Noninvasive Healing Of Damaged Piping System Using Electro-Magneto-Mechanical Methods. *Society of Petroleum Engineers (SPE) Journal*. 20(4):872-883. 2015.
- 2014 ■ **Mukherjee, D.**, and Zohdi, T. I. Electromagnetic Control Of Charged Particulate Spray Systems - Models For Planning The Spray-gun Operations. *Computer-Aided Design*. 46:211-215. 2014.

Peer-Reviewed Journal Publications (Submitted)

- Roopnarinesingh, R., Jani, N.D., Leppert, M., and **Mukherjee, D.** Understanding Thromboembolus Transport Patterns In The Brain For Stroke In The Presence Of Carotid Artery Stenosis. (*submitted, under review*).
[author preprint: medRxiv: <https://doi.org/10.1101/2024.09.29.24314524>]
- Majee, S., Sahni, A., Pal, J.D., McIntyre, E., and **Mukherjee, D.** Understanding Embolus Transport And Source To Destination Mapping Of Thromboemboli In Hemodynamics Driven By Left Ventricular Assist Device. (*submitted, under review*).
[author preprint: medRxiv: <https://doi.org/10.1101/2024.09.23.24314233>]
- Sahni, A., Majee, S., Pal, J.D., McIntyre, E.E., Cao, K., and **Mukherjee, D.** Hemodynamics Indicates Differences Between Patients With And Without A Stroke Outcome After Left Ventricular Assist Device Implantation. (*submitted, under review*).
[author preprint: medRxiv: <https://doi.org/10.1101/2023.08.03.23292572>]

Peer-Reviewed Proceedings

- *2025 ■ Soltys, M., Coutts, E., Koch, J.A., and **Mukherjee, D.** Integrating Finite Element Analysis and Computational Fluid Dynamics as Learning Tools in Undergraduate Engineering Courses. *The 2025 Annual Conference of the American Society of Engineering Education*. Montreal, Canada. June 2025. (*submitted*)
- 2024 ■ Rovito, N., and **Mukherjee, D.** In Silico Analysis Of Flow-mediated Drug Transport For Thrombolytic Therapy In Acute Ischemic Stroke. In: *Proceedings of the ASME 2024 International Mechanical Engineering Congress and Exposition*. Portland, Oregon. November 2024. (*accepted*).
*2024 ASME IMECE Young Engineers Paper Competition First Prize Winner
- Chauhan, A., Tucker, A., and **Mukherjee D.** Development Of A Benchtop Model For Cerebral Collateral Circulation. In: *Proceedings of the Summer Biomechanics, Bioengineering, and Biotransport Conference*, Lake Geneva, Wisconsin, June 2024.
*SB3C 2024 BS Student Paper Competition Finalist
- Teeraratkul, C., and **Mukherjee, D.** A Micromechanics Based Multiscale Model For Platelet-driven Clot Contraction. In: *Proceedings of the Summer Biomechanics, Bioengineering, and Biotransport Conference*, Lake Geneva, Wisconsin, June 2024.
*SB3C 2024 PhD Student Paper Competition First Prize Winner
- 2023 ■ Majee, S., Sahni, A., McIntyre, E.E., Pal, J.D., and **Mukherjee, D.** In Silico Investigation On Stroke Risks From Left Ventricular Assist Device. In: *Proceedings of the Summer Biomechanics, Bioengineering, and Biotransport Conference*, Vail, Colorado. June 2023.

Research Publications (continued)

- Roopnarinesingh, R., Jani, N.D., Leppert, M., and **Mukherjee, D.** Quantification Of Embolus Transport To The Brain From Carotid Stenosis Sites. *In: Proceedings of the Summer Biomechanics, Bioengineering, and Biotransport Conference, Vail, Colorado. June 2023.*
- Teeraratkul, C., Stalker, T.J., Tomaiuolo, M., and **Mukherjee, D.** Image Driven Simulation Of Hemodynamics Around A Dynamic Clot In Vivo. *In: Proceedings of the Summer Biomechanics, Bioengineering, and Biotransport Conference, Vail, Colorado. June 2023.*
- Jenkins, T.D., Santo, B.A., Ciecierska, S.K., Patel, T.R., **Mukherjee, D.**, Siddiqui, A.H., and Tutino, V.M. The Association Between Clot Presentation On CT, Biological Composition, And Material Properties: Implications For Pre-treatment Imaging Biomarkers. *In: Proceedings of the Summer Biomechanics, Bioengineering, and Biotransport Conference, Vail, Colorado. June 2023.*
- Sahni, A., McIntyre, E., Pal, J.D., and **Mukherjee, D.** Stroke Risk Quantification For Patients With A Left Ventricular Assist Device. *Stroke. 54: Suppl_1: AWP228. Abstract published for the 2023 American Heart Association International Stroke Conference. 2023.*
- 2022 ■ Shorofsky, M.J., **Mukherjee, D.**, Cao, K., Morgan, G.J., and Zablah, J.E. Feasibility Of Performing Computational Fluid Dynamic Assessment Of A Patient With Congenital Heart Disease From 3D Rotational Angiography. *In: Proceedings of CSI Frankfurt Congress 2022. Journal of Echocardiography. 39:859-876. 2022.*
- Roopnarinesingh, R., and **Mukherjee, D.** In Silico Investigation Of Contralateral Embolic Stroke Risks From Carotid Artery Disease. *In: Proceedings of the Summer Biomechanics, Bioengineering, and Biotransport Conference, Eastern Shore, Maryland. June 2022.*
- Andrews, S., Trivedi, P., and **Mukherjee, D.** An Iterative Approach To Assign Tumor-Specific Flow Boundary Conditions For Liver Cancer Using Multi-Modal Image Analysis. *In: Proceedings of the Summer Biomechanics, Bioengineering, and Biotransport Conference, Eastern Shore, Maryland. June 2022.*
**SB3C 2022 MS Student Paper Competition Finalist*
- 2021 ■ Sahni, A., Pal, J., and **Mukherjee, D.** Assessing The Hemodynamic Influence Of Pulse Flow Modulation For Left Ventricular Assist Devices. *In: Proceedings of the Summer Biomechanics, Bioengineering, and Biotransport Conference, Vail, Colorado. June 2021. (held online).*
**SB3C 2021 MS Student Paper Competition First Prize Winner*
- Zemlicka, A., Beiter, A., Trivedi, P., and **Mukherjee, D.** In Silico Modeling Of Embolic Particle Drug Delivery For Liver Cancer. *In: Proceedings of the Summer Biomechanics, Bioengineering, and Biotransport Conference, Vail, Colorado. June 2021. (held online).*
**SB3C 2021 BS Student Paper Competition Second Prize Winner*
- 2020 ■ Teeraratkul, C., and **Mukherjee, D.** Parallel Implementation Of A Hybrid Particle-continuum Finite Element Framework For Blood Clot Biomechanics. *In: Proceedings of the International Conference for High Performance Computing, Networking, Storage and Analysis. ACM-SC20. November 2020.*
- Khadangale, S.B., Hajebrahimi, S., Ferguson, V.L., Lynch, M.E., and **Mukherjee, D.** Fluid-Structure Interaction Framework For Fluid Flow Through The Bone Lacunar-Canalicular System With Morphological Variations. *In: Proceedings of the Summer Biomechanics, Bioengineering, and Biotransport Conference, Vail, Colorado. June 2020.*
- 2017 ■ **Mukherjee, D.**, and Shadden, S.C. Fictitious Domain Particle-Based Modeling For Thrombosis. *In: Proceedings of the Summer Biomechanics, Bioengineering, and Biotransport Conference, Tucson, Arizona. June 2017.*
- **Mukherjee, D.**, Jani, N.D., and Shadden, S.C. Discrete Particle Modeling For Thrombotic And Embolic Phenomena In Arteries. *In: Proceedings of the 5th International Conference on Computational and Mathematical Biomedical Engineering, Pittsburgh, Pennsylvania. April 2017.*
- 2016 ■ **Mukherjee, D.**, and Shadden, S.C. Towards Non-invasive, Computational Modeling Of The Transport Of Thrombo-Emboli And Athero-Emboli Along Arteries. *In: Proceedings of the Summer Biomechanics, Bioengineering and Biotransport Conference, National Harbor, Maryland. June 2016.*
- 2015 ■ **Mukherjee, D.**, and Shadden, S.C. Insights Into The Hemodynamic Factors Affecting Embolus Transport For Stroke. *In: Proceedings of the Summer Biomechanics, Bioengineering and Biotransport Conference, Snowbird, Utah. June 2015.*
- 2013 ■ **Mukherjee, D.**, and Zohdi, T.I. Computer Modeling and Simulation Framework for Particulate Spray Based Manufacturing Processes. *In: Proceedings of the ASME International Mechanical Engineering Congress & Exposition, San Diego, California. November 2013.*

Research Publications (continued)

- 2010 **Mukherjee, D.**, and Mansour, A.E. Preliminary Concept and Feasibility Studies on Ocean Energy Device Design from Used Ships. *In: Proceedings of the 29th International Conference on Ocean & Offshore, and Arctic Engineering, Shanghai, China. June 2010.*
**Recipient of the OMAE 2010 Conference Best Paper Award.*

Articles In Preparation

- Roopnarinesingh, R., Jani, N.D., Leppert, M., and **Mukherjee, D.** Quantification Of Mixing At Carotid Artery Disease Sites Within Heart-To-Brain Arterial Network. (*manuscript in preparation*).
- Teeraratkul, C., Tomaiuolo, M., Stalker, T.J., and **Mukherjee, D.** A Stabilized Finite Element Technique For Transport Phenomena Within And Around Immersed Porous Bodies In Flow. (*manuscript in preparation*)
- Chauhan, A., Tucker, A., and **Mukherjee, D.** A Benchtop Model For Investigating Cerebral Collateral Circulation And Collateral Flow Patterns After Stroke. (*manuscript in preparation*).
- Majee, S., Sahni, A., Roopnarinesingh, R., Balu, A., Krishnamurthy, A., and **Mukherjee, D.** Accelerating Lagrangian Flow Analysis Using Distance Fields. (*manuscript in preparation*).

Other Published Contributions

- Mukherjee, D., Lynch, M.E., and Ghosh, S. “Proceedings: MechBio Symposium 2024: Enabling Convergence Across Techniques And Scales.” Open Science Framework, 22 Dec. 2024. doi:10.17605/OSF.IO/84GEK.
- Mukherjee, D., and Lai, V. Education in Biomechanics and Bioengineering Ever Evolving, Ever Learning. *Journal of Biomechanical Engineering.* 146(5). 2024. *Guest editorial for special edition on education in biomechanics.*

Presentations

Conference Presentations

- 2024 ■ Roopnarinesingh, R., Majee, S., Rinkel, L., Coutinho, J., Cao, K., and **Mukherjee, D.** A Pipeline For Deriving Computational Fluid Models Of The Heart-to-brain Pathway From Standard-of-care Clinical Workup For Stroke. *The 77th Annual Meeting of the American Physical Society Division of Fluid Dynamics, Salt Lake City, Utah.* November 2024.
- Teeraratkul, C., and **Mukherjee, D.** A Two-Way Coupled Fluid Structure Interaction Framework For Immersed Soft Porous Media. *The 77th Annual Meeting of the American Physical Society Division of Fluid Dynamics, Salt Lake City, Utah.* November 2024.
- Gregory, J., Teeraratkul, C., Stalker, T.J., Tomaiuolo, M., and **Mukherjee, D.** Quantifying Blood Clot Biomechanics With Integrated CFD And Intravital Imaging. *The 77th Annual Meeting of the American Physical Society Division of Fluid Dynamics, Salt Lake City, Utah.* November 2024.
- Teeraratkul, C., and **Mukherjee, D.** Mesoscale Models Of Platelet-driven Clot Contraction Biomechanics. *MechBio Symposium 2024: Enabling Convergence Across Techniques And Scales, Boulder, Colorado.* August 2024.
**Winner of Conference Poster Award and selected as a Scientific Brief presentation.*
- Gregory, J., Teeraratkul, C., Tomaiuolo, M., Stalker, T.J., and **Mukherjee, D.** In Silico Modeling Of Clot Mechanical Response To Hemodynamics Forces. *MechBio Symposium 2024: Enabling Convergence Across Techniques And Scales, Boulder, Colorado.* August 2024.
- Gregory, J., Teeraratkul, C., Stalker, T.J., Tomaiuolo, M., and **Mukherjee, D.** Recreating In Vivo Unsteady Blood Clot Flow Dynamics Via An Imaging-informed In Silico Model. *The 9th Annual Rocky Mountain Fluid Mechanics Research Symposium, Boulder, Colorado.* August 2024.
- Rovito, N., and **Mukherjee, D.** An In Silico Model Of Flow-mediated Fibrinolysis In Acute Ischemic Stroke. *The 9th Annual Rocky Mountain Fluid Mechanics Research Symposium, Boulder, Colorado.* August 2024.
- Teeraratkul, C. and **Mukherjee, D.** A Two-Way Coupling Framework For Immersed Heterogeneous Structures in Flow with Applications in Vascular Systems. *16th World Congress on Computational Mechanics, Vancouver, Canada.* July 2024.

Presentations (continued)

- 2023
- Roopnarinesingh, R., Jani, N., Leppert, M., and **Mukherjee, D.** A Lagrangian Computational Methodology For Assessing Mixing In Hemodynamic Flows With Application In Carotid Atherosclerosis. *16th World Congress on Computational Mechanics, Vancouver, Canada.* July 2024.
 - Teeraratkul, C., Tomaiuolo, M., Stalker, T.J., and **Mukherjee, D.** Edge Stabilized Finite Element Method For Mass Transport Within And Around An Immersed Porous Media. *76th Annual Meeting of the American Physical Society Division of Fluid Dynamics, Washington, DC.* November 2023.
 - Chetia, T., Chauhan, A., Puhr, T., and **Mukherjee, D.** Feasibility Study Of Investigating Soft Embolic Particle Transport Using An In Vitro Benchtop Flow Loop Model. *76th Annual Meeting of the American Physical Society Division of Fluid Dynamics, Washington, DC.* November 2023.
 - Majee, S., Sahni, A., Pal, J., McIntyre, E., and **Mukherjee D.** In-silico Hemodynamics Simulations To Investigate Stroke Outcomes In Patients After Left Ventricular Assist Device Implantation. *76th Annual Meeting of the American Physical Society Division of Fluid Dynamics, Washington, DC.* November 2023.
 - Chauhan, A., Samal, S., Hertzberg, J.R., and **Mukherjee, D.** Development And Feasibility Analysis Of An Idealized Benchtop Model To Characterize Cerebral Flow Pathways. *76th Annual Meeting of the American Physical Society Division of Fluid Dynamics, Washington, DC.* November 2023.
 - Roopnarinesingh, R., Leppert, M., Jani, N., and **Mukherjee, D.** Embolus Transport And Distribution In The Brain In The Presence Of Contralateral Carotid Occlusion. *76th Annual Meeting of the American Physical Society Division of Fluid Dynamics, Washington, DC.* November 2023.
 - Teeraratkul, C., and **Mukherjee, D.** Discrete Particle Modeling Of Blood Clot Mechanics Under Contraction. *VIII International Conference on Particle-Based Methods. Milan, Italy.* October 2023.
 - Majee, S., Sahni, A., Roopnarinesingh, R., Balu, A., Krishnamurthy, A., and **Mukherjee, D.** Distance Field-Based Algorithms for Particle Contact Modeling in Physiological Flows. *The 17th United States National Congress On Computational Mechanics, Albuquerque, New Mexico.* July 2023.
 - Teeraratkul, C., Tomaiuolo, M., Stalker, T.J., and **Mukherjee, D.** Image Driven Simulation Methodology For In-Vivo Blood Clot-Hemodynamic Interaction. *The 17th United States National Congress On Computational Mechanics, Albuquerque, New Mexico.* July 2023.
- 2022
- Teeraratkul, C., Stalker, T.J., Tomiuolo, M., and **Mukherjee, D.** Intravital Microscopy To Continuum In Silico Simulation Of Flow-mediated Transport In Blood Clot Neighborhoods. *75th Annual Meeting of the American Physical Society Division of Fluid Dynamics, Indianapolis, Indiana.* November 2022.
 - Puhr, T., Chauhan, A., McDonnell, P., Jayaram, K., Bottenus, N., and **Mukherjee, D.** Understanding Particle Transport In Human Vascular Network Using In Vitro Benchtop Flow Modeling. *75th Annual Meeting of the American Physical Society Division of Fluid Dynamics, Indianapolis, Indiana.* November 2022.
 - Andrews, S., Trivedi, P., and **Mukherjee, D.** Preferential Flow Into Liver Tumors Based On Multimodal Image Analysis For Pre-treatment Planning Of Radioembolization Therapy. *75th Annual Meeting of the American Physical Society Division of Fluid Dynamics, Indianapolis, Indiana.* November 2022.
 - Andrews, S., Trivedi, P., and **Mukherjee, D.** An In Silico Case Study On Patient-Specific Hemodynamics During Transarterial Radioembolization Of Liver Cancer. *75th Annual Meeting of the American Physical Society Division of Fluid Dynamics, Indianapolis, Indiana.* November 2022.
 - Roopnarinesingh, R., Leppert, M.H., and **Mukherjee, D.** Parametric Investigations On Stroke Risks From Carotid Artery Disease. *75th Annual Meeting of the American Physical Society Division of Fluid Dynamics, Indianapolis, Indiana.* November 2022.
 - Cao, K., Zablah, J., Shorofsky, M., and **Mukherjee, D.** Integration Of Catheter Based Hemodynamic Data With 3D Rotational Angiography For Computational Hemodynamics Modeling Of Congenital Heart Disease. *75th Annual Meeting of the American Physical Society Division of Fluid Dynamics, Indianapolis, Indiana.* November 2022.
 - Teeraratkul, C., and **Mukherjee, D.** Parallel Implementation Of Efficient Cell Location Algorithm On Unstructured Mesh With Applications To Immersed Finite Element Methods. *The 2022 Rocky Mountain Advanced Computing Consortium High Performance Computing Symposium, Boulder, Colorado.* August 2022.
 - Puhr, T., Chauhan, A., McDonnell, P., Jayaram, K., Bottenus, N., and **Mukherjee, D.** Designing A Benchtop Flow Loop For Investigating Particle Transport In Human Arterial Flows. *The 8th Annual Rocky Mountain Fluid Mechanics Research Symposium, Boulder, Colorado.* August 2022.

Presentations (continued)

- Majee, S., Sahni, A., Roopnarinesingh, R., Balu, A., Krishnamurthy, A., and **Mukherjee, D.** Distance Field Based Approach For Resolving Particle–Wall Interactions For Biomedical Flows. *The 8th Annual Rocky Mountain Fluid Mechanics Research Symposium, Boulder, Colorado.* August 2022.
- Teeraratkul, C., Stalker, T.J., Tomaiuolo, M., and **Mukherjee, D.** Flow And Flow Mediated Transport In Dynamic Blood Clot Neighborhoods. *The 8th Annual Rocky Mountain Fluid Mechanics Research Symposium, Boulder, Colorado.* August 2022.
- Andrews, S., Trivedi, P., and **Mukherjee, D.** Image Based In Silico Modeling Of Transarterial Radioembolization For Liver Cancer. *The 8th Annual Rocky Mountain Fluid Mechanics Research Symposium, Boulder, Colorado.* August 2022.
- Cao, K., Zablah, J., Shorofsky, M., and **Mukherjee, D.** Computational Hemodynamics Using 3D Rotational Angiography Imaging. *The 8th Annual Rocky Mountain Fluid Mechanics Research Symposium, Boulder, Colorado.* August 2022.
- **Mukherjee, D.** In Silico Approaches Towards Understanding Thrombus Structure And Thrombus-hemodynamics Interactions. *Gordon Research Conference on Hemostasis, Waterville Valley, New Hampshire.* July 2022.
- Teeraratkul, C., and **Mukherjee, D.** Immersed Discrete Element Method With Applications In Embolus Transport. *15th World Congress On Computational Mechanics. Virtual.* July, 2022.
- Sahni, A., and **Mukherjee, D.** Cerebrovascular Accidents In Patients With A Left Ventricle Assist Device - The Role of Quantitative In Silico Models. *Additional Ventures Speaker Series.* February 2022.
**Student Akshita Sahni selected and featured as an Early Career Lightning Round speaker.*
- 2021 ■ **Mukherjee, D.** Developing Hands–on Simulation Based Active Learning Modules For Teaching Fluid Flow Concepts. *74th Annual Meeting of the American Physical Society Division of Fluid Dynamics, Phoenix, Arizona.* November 2021.
- Sahni, A., Pal, J., and **Mukherjee, D.** Hemodynamic Indicators Of Cerebrovascular Accidents In Patients Implanted With A Left Ventricular Assist Device. *74th Annual Meeting of the American Physical Society Division of Fluid Dynamics, Phoenix, Arizona.* November 2021.
- Teeraratkul, C., and **Mukherjee, D.** Fluid–particle Interaction Using Immersed Finite Element Method With Applications In Arterial Flows. *74th Annual Meeting of the American Physical Society Division of Fluid Dynamics, Phoenix, Arizona.* November 2021.
- Nast, L., and **Mukherjee, D.** Computational Modeling Of Flow–mediated Fibrin Degradation In Arterial Blood Clots During Thrombolysis. *74th Annual Meeting of the American Physical Society Division of Fluid Dynamics, Phoenix, Arizona.* November 2021.
- Teeraratkul, C., Tomaiuolo, M., and **Mukherjee, D.** In Silico Exploration Of Driving Forces For Transport In Arterial Thrombus Neighborhood. *The 2021 Biomedical Engineering Society Annual Meeting.* October 2021.
- Teeraratkul, C., and **Mukherjee, D.** Two-way Coupled Fluid–particle Interaction Using Immersed Finite Element Method. *7th Annual Rocky Mountain Fluid Mechanics Research Symposium .* August 2021. *(held online).*
- Wadhwa, G. and **Mukherjee, D.** Flow-mediated Infection Transmission In A Dynamic Social Environment In Indoor Occupied Spaces. *7th Annual Rocky Mountain Fluid Mechanics Research Symposium.* August 2021. *(held online).*
- Wilson, J., Miller, S., and **Mukherjee, D.** An Euler–Lagrange Model Of The Transmission Of Respiratory Ejecta Carrying SARS-CoV-2 In Enclosed Spaces. *The 16th United States National Congress On Computational Mechanics.* July 2021. *(held online).*
- Teeraratkul, C., and **Mukherjee, D.** Computational Model For Biochemical Transport In Large Arterial Thrombus Neighborhood. *The 16th United States National Congress On Computational Mechanics.* July 2021. *(held online).*
- Teeraratkul, C., and **Mukherjee, D.** Implementation of fluid–structure interactions for rigid body motion in FEniCS using immersed finite element method. *The FEniCS 2021 Conference.* March 2021. *(held online).*
- 2020 ■ **Mukherjee, D.** Devising Strategies For Online And Remote Teaching Of Computational Fluid Dynamics Concepts. *73rd Annual Meeting of the American Physical Society Division of Fluid Dynamics.* November 2020. *(held online)*

Presentations (continued)

- Sahni, A., Beiter, A., Pal, J., and **Mukherjee, D.** Assessing Hemodynamics In The Ascending Aorta Due To Surgical Anastomosis And Flow Modulation Of Left Ventricular Assist Device. *73rd Annual Meeting of the American Physical Society Division of Fluid Dynamics*. November 2020. (held online)
- Pullutasis, B., and **Mukherjee, D.** Quantification Of Arterial Flow Using Planar Digital Subtraction Angiography Image Data With Applications To Hepatic Circulation. *73rd Annual Meeting of the American Physical Society Division of Fluid Dynamics*. November 2020. (held online)
- Wilson, J., Miller, S., Clements, N., Steiner, C., and **Mukherjee, D.** A Coupled Lagrangian Model For Flow-mediated Transmission Of SARS-CoV-2 Through Respiratory Ejecta In A Skilled Nursing Facility. *73rd Annual Meeting of the American Physical Society Division of Fluid Dynamics*. November 2020. (held online)
- Teeraratkul, C., and **Mukherjee, D.** Quantification Of The Hemodynamic Environment Around Large Arterial Blood Clots. *73rd Annual Meeting of the American Physical Society Division of Fluid Dynamics*. November 2020. (held online)
- Wilson, J., Miller, S., Clements, N., Steiner, C., and **Mukherjee, D.** Flow Physics Informed Design Of A Negative Pressure Isolation Space For SARS-CoV-2 In A Skilled Nursing Facility. *CCTSI CU-CSU Summit VIII: Covid-19 and the Colorado Research Environment*. August 2020 (held online).
**Contribution featured as a summit lightning talk*
- Sahni, A., Beiter, A., and **Mukherjee, D.** Variations In Aortic Hemodynamics Due To Surgical Anastomosis And Flow Modulation In Left Ventricle Assist Devices. *The 6th Annual Rocky Mountain Fluid Mechanics Research Symposium, Boulder, Colorado*. August 2020. (held online).
- Teeraratkul, C., and **Mukherjee, D.** Understanding Flow-mediated Transport In The Arterial Thrombus Neighborhood. *The 6th Annual Rocky Mountain Fluid Mechanics Research Symposium, Boulder, Colorado*. August 2020. (held online).
- Wilson, J., Miller, S., Clements, N., Steiner, C., and **Mukherjee, D.** Flow Physics Modeling For SARS-CoV-2 Negative Pressure Isolation Space In A Skilled Nursing Facility. *The 6th Annual Rocky Mountain Fluid Mechanics Research Symposium, Boulder, Colorado*. August 2020. (held online).
- Teeraratkul, C., Irwin, Z., and **Mukherjee, D.** Hemodynamic Phenomena At The Blood-Thrombus Interface - Implications For Thrombosis. *The 14th World Congress on Computational Mechanics, Paris, France*. July 2020. (modified virtual format presentation held January 2021 due to Covid-19).
- Teeraratkul, C., and **Mukherjee, D.** Parallel Implementation Of A Hybrid Particle-Continuum Finite Element Framework For Blood Clot Biomechanics. *The 10th Annual High Performance Computing Symposium, Rocky Mountain Advanced Computing Consortium, Boulder, Colorado*. May 2020.
**RMACC HPC Symposium 2020 Best Poster Award Winner*
- 2019 ■ **Mukherjee, D.** Computational Investigations On Flow-mediated Transport Processes At The Blood-thrombus Interface. *72nd Annual Meeting of the American Physical Society Division of fluid Dynamics, Seattle, Washington*. November 2019.
- **Mukherjee, D.** Developing A New CFD Course Based On Open Source Tools: Design Experience And Student Outcomes. *72nd Annual Meeting of the American Physical Society Division of fluid Dynamics, Seattle, Washington*. November 2019.
- Khadangale, S., Hajebrahimi, S., Lynch, M.E., and **Mukherjee, D.** Computational Analysis Of Interstitial Fluid Flow Through The Lacunar-canalicular System With Morphological Variations. *72nd Annual Meeting of the American Physical Society Division of fluid Dynamics, Seattle, Washington*. November 2019.
- Kang, T., **Mukherjee, D.**, Kim, J.M., Park, K.Y., and Ryu, J. Computational Study Of Hemodynamic Nature In Patient-specific Cerebrovasculature With Lenticulostriate Artery Under ICA Stenosis Conditions. *72nd Annual Meeting of the American Physical Society Division of fluid Dynamics, Seattle, Washington*. November 2019.
- **Mukherjee, D.** Image-driven Particle-based Methods For Stroke And Thrombosis. *VI International Conference On Particle-based Methods. Fundamentals And Applications, Barcelona, Spain*. October, 2019.
- **Mukherjee, D.**, Jani, N.D., Narvid, J., and Shadden, S.C. Computational Investigations On Cerebral Vasculature Anatomy And Its Role In Embolic Stroke. *The 15th United States National Congress on Computational Mechanics, Austin, Texas*. July 2019.
- 2018 ■ **Mukherjee, D.**, Diamond, S.L., and Shadden, S.C. Towards Developing Hybrid Particle-continuum Frameworks For Thrombosis And Embolization Biomechanics In Large Arteries. *The 8th World Congress Of Biomechanics, Dublin, Ireland*. July 2018.

Presentations (continued)

- Mukherjee, D.**, and Shadden S.C. Hybrid Particle-continuum Computational Models For Thrombus Biomechanics. *The 13th World Congress On Computational Mechanics, New York City, New York.* July 2018.
- Pyne, J., **Mukherjee, D.**, Ryu, J., Narvid, J., and Shadden S.C. Computational Quantification Of Cerebrovascular Flow During A Trans-catheter Aortic Valve Implantation (TAVI) Procedure. *The Heart and Brain Symposium, Chicago, Illinois.* June 2018.
- Mukherjee, D.**, and Shadden. S.C. The Role Of Hemodynamics In Organizing Transport In Thrombus Neighborhood. *2018 Cellular and Molecular Bioengineering Conference, Biomedical Engineering Society, Key Largo, Florida.* January 2018.
- 2017
Mukherjee, D., Garduno, J., and Shadden, S.C. Flow-mediated Transport Around A Macroscopic Arterial Thrombus. *70th Annual Meeting Of The American Physical Society Division Of Fluid Dynamics, Denver, Colorado.* November 2017.
- Pyne, J., **Mukherjee, D.**, Narvid, J., Bowen, M., Dehkhargani, S., and Shadden, S.C. Approximating Ischemic Stroke Location And Abnormal Tissue Regions Through Subtracting NCCT And CTA Scans. *The 14th Annual UCSF Imaging Research Symposium, San Francisco, California.* October 2017.
- Mukherjee, D.**, and Shadden, S.C. Discrete Particle Techniques For Modeling Fragmentation Of Blood Clots. *14th United States National Congress On Computational Mechanics, Montreal, Canada.* July 2017.
- Mukherjee, D.**, and Shadden, S.C. Particle-based Computational Techniques For Stroke And Thrombosis. *Berkeley/Stanford Computational Mechanics Festival (CompFest), Berkeley, California.* April 2017.
- 2016
Mukherjee, D., and Shadden, S.C. Fictitious Domain Based Models For Resolving Interaction Of A Clot With Blood Flow. *69th Annual Meeting Of The American Physical Society Division Of Fluid Dynamics, Portland, Oregon.* November 2016.
- Jani, N.D., **Mukherjee, D.**, and Shadden, S.C. Evaluating Blood Flow And Embolus Distribution In The Brain As A Function Of The Anatomy Of The Circle Of Willis. *69th Annual Meeting Of The American Physical Society Division Of Fluid Dynamics, Portland, Oregon.* November 2016.
- Jani, N.D., **Mukherjee, D.**, and Shadden S.C. Influence Of Variations In Circle Of Willis Anatomy On Cerebral Circulation & Embolus Distribution. *Annual Meeting Of The Biomedical Engineering Society, Minneapolis, Minnesota.* October 2016.
- Mukherjee, D.**, and Shadden, S.C. Thrombus Hemodynamics Interactions: From Intra-Thrombus Transport To Macro-Scale Flow Structures. *Mechbio Symposium: Putting Together The Cell Mechanome, San Diego, California.* August 2016.
- Mukherjee, D.**, and Shadden, S.C. Modeling Embolus Transport & Thrombus Interaction With Arterial Hemodynamics & Its Relevance To Improving Treatment Procedures. *The 5th International Conference on Engineering Frontiers In Pediatric & Congenital Heart Disease, Orlando, Florida.* June 2016.
**Recipient of the conference Best Poster Award*
- Mukherjee, D.**, Jani, N.D., and Shadden, S.C. Characterizing Embolus Transport To The Circle Of Willis. *The 8th International Bio-Fluids Symposium, Pasadena, California.* February 2016.
- 2015
Mukherjee, D., Jani, N.D., and Shadden, S.C. Modeling And Simulation Of Cardiogenic Embolic Particle Transport To The Brain. *68th Annual Meeting Of The American Physical Society Division Of Fluid Dynamics, Boston, Massachusetts.* November 2015.
- Casas, G., **Mukherjee, D.**, Celigueta, M.A., Zohdi, T.I., and Onate, E. Large-Scale Grain Distribution Simulations With Rotating Machinery Using Efficient Discrete Element Models. *Particles 2015 - IV International Conference On Particle-Based Methods: Fundamentals And Applications, Barcelona, Spain.* September 2015.
- Mukherjee, D.**, and Shadden, S.C. Embolus Interactions With Blood Flow And Its Role In Stroke. *13th United States National Congress On Computational Mechanics, San Diego, California.* July 2015.
- 2014
Mukherjee, D., and Shadden, S.C. A Patient-Specific CFD-Based Study Of Embolic Particle Transport For Stroke. *67th Annual Meeting Of The American Physical Society Division Of Fluid Dynamics, San Francisco, California.* November 2014.
- Mukherjee, D.**, Zaky, Z., Zohdi, T.I., Salama, A., and Sun, S. Investigation Of Noninvasive Healing Of Damaged Piping System Using Electro-Magneto-Mechanical Methods. *Society Of Petroleum Engineers International Oilfield Corrosion Conference & Exhibition, Aberdeen, United Kingdom.* May 2014.
**Recipient of the conference Best Poster Award*

Presentations (continued)

- 2013
- **Mukherjee, D.**, and Zohdi, T.I. Collision Driven Particle Dynamics Simulations For Analyzing Flows Of Particulate Sprays And Jets. *66th Annual Meeting Of The American Physical Society Division Of Fluid Dynamics, Pittsburgh, Pennsylvania*. November 2013.
 - **Mukherjee, D.**, and Zohdi, T.I. Electromagnetic Control Of Charged Particulate Spray Systems – Planning The Spray-Gun Operations. *SIAM Conference On Geometrical And Physical Modeling, Denver, Colorado*. November 2013.
 - **Mukherjee, D.**, and Zohdi, T.I. Discrete Particle Simulation For The Analysis Of Colliding And Flowing Particulate Media. *Berkeley/Stanford Computational Mechanics Festival (CompFest), Berkeley, California*. October 2013.
 - **Mukherjee, D.**, and Zohdi, T.I. Development Of A Computer Simulation Tool For Discrete Element Method And Collision Driven Particle Dynamics Simulations. *12th United States National Congress On Computational Mechanics, Raleigh, North Carolina*. July 2013.

Invited Presentations And Seminars

- 2024
- *Blood Clot And Blood Flow: How Can We See This Unseen Conversation?* – invited talk at the Department of Mechanical Engineering, University of Louisville, August 2024.
 - *Open Source Technology Integration For Active Learning*. – invited talk at the NSF funded Active Learning Symposium, University of Colorado Boulder, May 2024. (co-presenter: Jeremy Koch).
- 2023
- *The Hemodynamic Underpinnings of Complications in Patients with an Operating Left Ventricular Assist Device*. – invited talk at the College of Engineering, University of Colorado Denver, September 2023.
 - *Computational Modeling Of Thrombosis: Perspectives on clot, flow, and stuff around it*. – invited talk at the Biorheology Scientific and Standardization Committee, International Society on Thrombosis and Hemostasis (ISTH) Congress, June 2023.
- 2021
- *Investigations Into The Underlying Biomechanics Of Stroke*. – invited talk at the Anschutz Neurohospitalist Research Retreat, University of Colorado, Anschutz Medical Campus, August 2021.
 - *An Introduction To Particles In Cardiovascular Modeling*. – invited lecture at the Department of Mechanical Engineering, Iowa State University, May 2021.
 - *Flow-mediated Transport Phenomena In And Around Arterial Blood Clots*. – invited talk at the Department of Chemical Engineering, University of Utah, Salt Lake City, March 2021.
 - *Looking Into Stroke And Thrombosis From A Flow Physics Perspective*. – invited talk at the Fluid Mechanics, Combustion, and Engineering Physics Seminar Series, Department of Mechanical and Aerospace Engineering, University of California, San Diego, March 2021.
- 2020
- *Unraveling The Role Of Fluid Flow In Stroke And Thrombosis*. – invited talk at the Mechanical Engineering Seminar Series, Rice University, Houston, November 2020.
 - *In Silico Approaches For Patient-specific Investigations On Stroke And Embolisms*. – invited talk at the Stroke/NH Didactics, Department of Neurology, University of Colorado School of Medicine, Anschutz Medical Campus, August 2020.
- 2019
- *Modeling Local Transport Processes In Arterial Blood Clots Using Particle Methods*. – invited talk at the “Vascular Biomechanics In Development And Disease” symposium in the Society of Engineering Science (SES) meeting, St. Louis, October 2019.
 - *In Silico We Trust! Noninvasive Insights On Physiological Systems Using Computational Platforms*. – ‘Faculty Show And Tell’ research talk at the BioFrontiers Institute, University of Colorado, Boulder, October 2019.
- 2018
- *Computational Investigations On Unravelling The Hemodynamic Underpinnings Of Cardiovascular Diseases*. – invited talk at the Department of Mechanical Engineering, the University of Colorado Boulder, March 2018.
 - *Particles In Flow: Computational Insights Into The Rich Dynamics Of Particle Systems With Applications In Manufacturing And Biomechanics*. – invited talk at the Department of Mechanical and Aerospace Engineering, the University at Buffalo, February 2018.
 - *Insights Into Developing Patient-specific Computational Fluid Dynamics Models For Cardiovascular Diseases*. – invited talk at the Department of Mechanical Engineering, Villanova University, February 2018.
 - *Computational Investigations On The Hemodynamic Underpinnings Of Cardiovascular Diseases*. – invited talk at the Department of Mechanical Engineering, University of Nevada, Reno, January 2018.

Presentations (continued)

- 2017
- *Understanding Blood Flow And Flow Mediated Transport Around Arterial Blood Clots.* - invited talk at the Berkeley Fluids Seminar Series, U.C. Berkeley, October 2017.
 - *Discrete Particle Based Computational Techniques For Investigating The Role Of Hemodynamics In Stroke And Thrombosis.* - invited talk at Department of Mathematics, University of Houston, September 2017.
 - *Exploring The Hemodynamic Underpinnings Of Stroke, Thrombosis, And Embolisms.* - invited talk at Auburn University, September 2017.
 - *Hybrid Particle-continuum Modeling For Thrombosis And Embolism - An Overview.* - invited talk at the Diamond Lab, Institute for Medicine and Engineering, University of Pennsylvania, August 2017.
 - *Collective Dynamics And Flow Of Particle Systems: Applications In Industry And Healthcare.* - invited talk at the Department of Mechanical Engineering, Stony Brook University, April 2017.
- 2016
- *Image-driven, Particle Based Computational Models For Thrombotic And Embolic Phenomena In Large Arteries.* - invited talk at the Berkeley Fluids Seminar series, U.C. Berkeley, October 2016.
 - *Image-based Computational Modeling Of Thrombotic And Embolic Phenomena In Large Arteries.* - invited talk at Medtronic Neurovascular, Irvine, California, June 2016.
- 2013
- *Discrete Particle Simulations For The Analysis Of Colliding And Flowing Particulate Media.* - invited talk at the Berkeley Fluids Seminar series, U.C. Berkeley, October, 2013.
 - *Discrete Element And Collision Driven Particle Dynamics Simulations For Manufacturing.* - invited talk at Siemens Energy, Orlando, Florida, April, 2013.
 - *The Story Of Sprays, Grains, And Computers - An Overview Of Probing Granular & Particulate Material Using Computer Simulations.* - invited talk at the Department of Physics, Indian Institute of Science Education & Research, Bhopal, India, January 2013.

Software

- **FLATiron Toolkit:** finite element library for flow physics and transport phenomena.
Role: Creator, developer, maintainer.
Link: <https://github.com/flowlabcu/FLATiron>
- **Dataset: Transport and Distribution of Embolic Particles in Human Vasculature**
Role: Creator, developer, maintainer.
Link: <https://doi.org/10.17605/OSF.IO/CQKZT>
- **VCPrePost:** Open source package for facilitating particle-based modeling in biological flows.
Role: Creator, developer, maintainer.
Link: <https://gitlab.com/dbnjn/vcprepost-release>

Research Funding

Ongoing Funding

- 2023 - 2024
- **University of Colorado Research and Innovation Office (RIO) Seed Grant**
Title: *Motion Of Ellipsoidal Microparticles In Physiological Flows.*
Award Amount: \$ 49,985.00
- 2020 - 2025
- **National Institutes of Health - NIBIB R21**
Title: *In Silico Mapping of the Heart-Brain Embolus Transport Pathway for Stroke.*
Award Number: R21EB029736
Award Amount: \$ 584,301.00

Research Funding (continued)

Completed Funding

- 2022 - 2023 **NCATS and CCTSI Translational Methods Pilot Grant**
Title: *Computational Fluid Dynamic Assessment Of Patients With Congenital Heart Disease From 3D Rotational Angiography Obtained In The Catheterization Laboratory.*
Award Number: TM-T-22-122
Award Amount: \$ 20,000.00
- 2020 - 2021 **University of Colorado Anschutz-Boulder (AB) Nexus**
Title: *Stroke Risk Assessment For Improved Left Ventricle Assist Device Therapy In Heart Failure Patients.*
Award Number: AB Nexus Research Collaboration Grant
Award Amount: \$ 50,000.00
- Extreme Science and Engineering Discovery Environment (XSEDE)**
Title: *Computational Methods For Investigating Blood Flow And Transport Within And Around Arterial Blood Clots.*
Award Number: TG-MCB200188
Award Amount: 50,000 core hours
- Oak Ridge Associated Universities**
Title: *Benchtop Flow-loop System For Stroke.*
Award Number: Through Ralph Powe Junior Faculty enhancement Award.
Award Amount: \$ 10,000.00
Note: award amount includes matching funds from Paul M Rady Mechanical Engineering Department.
- 2016-2017 **American Heart Association**
Title: *A Meso-scale Discrete Element Framework for Simulations of Thrombus Growth and Embolization.*
Award Number: 16POST27500023
Award Amount: \$ 90,000.00
- Burroughs Wellcome Fund**
Title: *Large Artery Thrombosis: Unifying Microscale Experiments And Mesoscale Computations.*
Award Number: 1016360
Award Amount: \$ 5,240.00

Other Funding (ongoing and completed)

- 2024-2025 **NSF CMMI Conference Support Grant**
Award Number: 2444816
Award Amount: \$ 7,100.00
Grant to support MechBio Symposium 2024 organized by Prof. Mukherjee (PI)
- 2023-2023 **Office of Faculty Affairs Faculty Success Grant**
Award Amount: \$ 4,650.00
Award by CU Boulder Office of Faculty Affairs to participate in the NCFDD Faculty Success Program.
- 2022-2024 **CU Boulder Mechanical Engineering DEI Action Grant**
Award Amount: \$ 3,000.00
Award to support professional forum for South Asian and international engineering students.
- 2016-2017 **NSF CMMI Conference Support Grant**
Award Number: 1642312
Award Number: \$ 12,320.00
Grant to support MechBio Symposium 2016 co-organized by Prof. Mukherjee (co-PI)

Research Supervision

Principal Advisor: Post-doctoral Researchers

- 2022 - 2024 **Dr. Sreeparna Majee:** Mechanical Engineering, University of Colorado Boulder.

Research Supervision (continued)

Principal Advisor: Ph.D. - Completed

- 2019 - 2024 ■ **Chayut Teeraratkul:** Mechanical Engineering, University of Colorado Boulder.
Thesis: *“Development Of Data-Integrated Multiphysics In Silico Modeling Techniques For Blood Clot Mechanics And Clot-Flow Interactions.”*
Graduated: July 2024
Position post-graduation: Post-doctoral Associate, University of Colorado Boulder

Principal Advisor: Ph.D. - Ongoing

- 2024 - present ■ **Scott Malloy:** Mechanical Engineering, University of Colorado Boulder.
 ■ **Jessica Holmes:** Mechanical Engineering, University of Colorado Boulder.
 ■ **Adiba Ashrafee:** Biomedical Engineering, University of Colorado Boulder.
- 2023 - present ■ **Nicholas Rovito:** Mechanical Engineering, University of Colorado Boulder.
- 2021 - present ■ **Ricardo Roopnarinesingh:** Mechanical Engineering, University of Colorado Boulder.

Principal Advisor: M.S. Thesis - Completed

- 2021 - 2022 ■ **Summer Andrews:** Mechanical Engineering, University of Colorado Boulder
Thesis: *“Image-Derived In Silico Modeling Of Transarterial Radioembolization For Patients With Hepatocellular Carcinoma”*
Graduated: December 2022
Position post-graduation: Mechanical Engineer, Custom Microwave
- **Thomas Puh:** Mechanical Engineering, University of Colorado Boulder
Thesis: *“In Vitro Benchtop Flow Loop For Investigating Embolic Particle Distribution”*
Graduated: December 2022
Position post-graduation: Mechanical Engineer Technician, Electra (clean iron company)
- 2020 - 2021 ■ **Joseph Wilson:** Mechanical Engineering, University of Colorado Boulder
Thesis: *“Computational Modeling of Viral Infection Transmission and Control in Indoor Spaces”*
Graduated: August 2021
Position post-graduation: Development engineer, TPI Composites.
- 2019 - 2021 ■ **Akshita Sahni:** Mechanical Engineering, University of Colorado Boulder
Thesis: *“Image-based In Silico Investigations For Hemodynamic Assessment In Patients With Left Ventricle Assist Devices.”*
Graduated: December 2021
Position post-graduation: Research associate; University of Colorado Boulder.
- **Byron Pullutasig:** Mechanical Engineering, University of Colorado Boulder
Thesis: *“Dynamics Of Contrast Agent Injected Into Arterial Blood Flow”*
Graduated: May 2021
Position post-graduation: National Renewable Energy Laboratory.

Principal Advisor: M.S. Thesis - Ongoing

- 2024 - present ■ **Manaswi Pulijala:** Mechanical Engineering, University of Colorado Boulder
 ■ **Joshua Gregory:** Mechanical Engineering, University of Colorado Boulder

Principal Advisor: M.S. - Completed

- 2020 - 2023 ■ **Lindsey Nast:** Mechanical Engineering, University of Colorado Boulder
- 2022-2022 ■ **Katheryn Holter:** Biomedical Engineering, University of Colorado Boulder
- 2019-2020 ■ **Shailesh B. Khadangale:** Mechanical Engineering, University of Colorado Boulder.
 ■ **Zachariah Irwin:** Mechanical Engineering, University of Colorado Boulder.

Principal Advisor: M.S. - Ongoing

- None currently under Prof. Mukherjee’s supervision.

Research Supervision (continued)

Principal Advisor: Undergraduate

- 2024 – present
- **Shrim Patel:** Biomedical Engineering, University of Colorado Boulder.
 - **Madison Kuo:** Biomedical Engineering, University of Colorado Boulder.
- 2023 – present
- **Nihal Pandra:** Biomedical Engineering, University of Colorado Boulder.
 - **Alena Tucker:** Biomedical Engineering, University of Colorado Boulder.
- 2023 – 2024
- **Sarthak Samal:** Biomedical Engineering, University of Colorado Boulder.
- 2022 – 2024
- **Joshua Gregory:** Mechanical Engineering, University of Colorado Boulder.
- 2021 – 2024
- **Kelly Cao:** Biomedical Engineering, University of Colorado Boulder.
 - **Argudit Chauhan:** Biomedical Engineering (pre-med), University of Colorado Boulder.
- 2020 – 2022
- **Andrew Beiter:** Mechanical Engineering, University of Colorado Boulder.
- 2020 – 2021
- **Autumn Marie Zemlicka:** Mechanical Engineering, University of Colorado Boulder.
- 2020 – 2020
- **Andrea Chamorro:** Computer Science, University of Colorado Boulder.
- 2019 – 2020
- **Colin Armstrong:** Mechanical Engineering, University of Colorado Boulder.
 - **Afnan Dean Al Haj:** Mechanical Engineering, University of Colorado Boulder.

Awards Won By Trainees

- 2024
- **Nick Rovito:** *Young Engineers Paper Competition First Prize Winner; Fluids Engineering Division (FED), American Society of Mechanical Engineers (ASME).*
 - **Chayut Teeraratkul:** *Best Poster Award: Post-doctoral Trainee Competition; MechBio Symposium 2024; Boulder, Colorado.*
 - **Chayut Teeraratkul:** *Best Paper Award: PhD Student Paper Competition; 2024 Summer Biomechanics, Bioengineering, and Biotransport Conference*
 - **Nick Rovito:** *Outstanding Teaching Assistant Award; Paul M Rady Department of Mechanical Engineering, University of Colorado Boulder*
 - **Joshua Gregory:** *College of Engineering & Applied Science Research Award; University of Colorado Boulder*
 - **Argudit Chauhan:** *College of Engineering & Applied Science Academic Engagement Award; University of Colorado Boulder*
 - **Kelly Cao:** *College of Engineering & Applied Science Research Award; University of Colorado Boulder*
- 2023
- **Chayut Teeraratkul:** *Thomas and Brenda Graduate Geers Fellowship Award; University of Colorado Boulder*
- 2022
- **Joseph Wilson:** *David T. Spalding Graduate Teaching Fund Fellowship Award; University of Colorado Boulder*
- 2021
- **Akshita Sahni:** *Best Paper Award; MS Student Paper Competition; 2021 Summer Biomechanics, Bioengineering, and Biotransport Conference*
 - **Autumn Zemlicka:** *Best Paper Award; BS Student Paper Competition; 2021 Summer Biomechanics, Bioengineering, and Biotransport Conference*
- 2020
- **Chayut Teeraratkul:** *Best Poster Award; 2020 High Performance Computing Symposium, Rocky Mountain Advanced Computing Consortium*

*Mentorship Roles Prior to Joining University of Colorado Boulder

- *2015–2018
- **Supervisor and mentor:** undergraduate student researchers working on computational fluid dynamics in the brain; Mechanical Engineering; University of California, Berkeley.
 - Anusree Oruganti
 - Abhinav Koppu
 - Aditya Aiyer
 - Neel D. Jani
 - Kartiga Selvaganesan
 - Christopher Lee Weng

Research Supervision (continued)

- *2012–2013 **Capstone Mentor:** Capstone project – ‘Gas turbine blade thermo-mechanical design’ with Siemens Corporation;
Fall 2012–Spring 2013; Department of Mechanical Engineering; University of California, Berkeley.

Teaching

Lecture-Based Courses

- 2024 **MCEN 4228/5228-003: Fluid Mechanics in the Human Body;** Spring 2024
 MCEN 4231/5231: Computational Fluid Dynamics; Spring 2024
- 2023 **MCEN 3021: Fluid Mechanics;** Fall 2023
 MCEN 4231/5231: Computational Fluid Dynamics; Spring 2023
- 2022 **MCEN 3021: Fluid Mechanics;** Fall 2022
 MCEN 4228/5228-019: Fluid Mechanics in the Human Body; Fall 2022
 MCEN 4228/5228-005: Computational Fluid Dynamics; Spring 2022
- 2021 **MCEN 4228/5228-003: Computational Fluid Dynamics;** Spring 2021
- 2020 **MCEN 4228/5228-009: Macroscale Biofluid Mechanics;** Fall 2020
 (*developed brand new course from scratch*).
 MCEN 4228/5228-005: Computational Fluid Dynamics; Spring 2020.
- 2019 **MCEN 5021: Introduction to Fluid Dynamics;** Fall 2019
 (*cross-listed with ASEN 5051: Fluid Mechanics; Aerospace Engineering Dept.*).
 MCEN 4228/5228-005: Computational Fluid Dynamics; Spring 2019
 (*developed brand new course from scratch*)

Graduate Independent Study Supervision

- 2024 **Isabelle Eskay:** Biomedical Engineering; Spring 2024.
 Topic: *Biochemical Transport in Complex Flows*.
- 2020 **Akshita Sahni:** Mechanical Engineering; Spring 2020.
 Topic: *Image-based Modeling in Biomechanics*.

Undergraduate Independent Study Supervision

- 2024 **Nihal Pandra:** Fall 2024
 Topic: *Image-based Modeling in Biomechanics*.
- 2022 **Kelly Cao:** Fall 2022
 Topic: *Image-based Fluid Mechanics*.
- 2019 **Afnan Dean Al Haj:** Spring 2019
 Topic: *Fluid Particle Modeling Techniques with Applications in Stroke Biomechanics*.
- Zachariah Irwin:** Spring 2019
 Topic: *Lagrangian Analysis Techniques for Complex Flows*.

Guest Lectures

- 2024 **BMEN 1000: Spring 2024;** Biomedical Engineering; University of Colorado Boulder
 Guest lecture titled: “*Fluid Flows in the Human Body: What, Why, How.*”
- 2023 **BME Graduate Seminars: Fall 2023;** Biomedical Engineering; University of Colorado Boulder
 Guest seminar titled: “*Biofluids in Health and Disease: Exploring flow, transport, and forces with applications in the vascular system.*”
- BMEN 1000: Spring 2023;** Biomedical Engineering; University of Colorado Boulder
 Guest lecture titled: “*Fluid Flows in the Human Body: What, Why, How.*”
- 2020 **MCEN 4228/5228-003: Fall 2020;** Mechanical Engineering; University of Colorado Boulder
 Guest lecture titled “*Hemodynamic Phenomena in Microfluidic Systems: An Overview*”

Teaching (continued)

- 2019 **MCEN 4133/5133: Spring 2019;** Mechanical Engineering; University of Colorado Boulder
Guest lecture titled “*The Biomechanics of Blood Clots*”

*Prior to Joining University of Colorado Boulder

- *2014 **Instructor:** Bootcamp Summer Session on *Basics of MATLAB Programming* for students at the Transfer To Excellence Research Experience for Undergraduates (TTE REU) program; University of California, Berkeley.
Guest Lecturer: *Software Tools for Hemodynamics Modeling*; for graduate course titled Fluid Mechanics of Biological Systems; Spring 2014; Department of Mechanical Engineering; University of California, Berkeley.
- *2013 **Instructor and Co-organizer:** Freshman Energy Engineering Seminar Series; Fall 2013; College of Engineering; University of California, Berkeley.
- *2012 **Graduate Teaching Assistant:** Course: *Computational Design of Multi-functional Materials*; Level: Graduate; Spring 2012; Department of Mechanical Engineering; University of California, Berkeley.
Graduate Teaching Assistant: Course: *Graduate Introduction to Finite Element Analysis*; Level: Graduate; Fall 2012; Department of Mechanical Engineering; University of California, Berkeley.
- *2011 **Graduate Teaching Assistant:** Course: *Microprocessor Based Mechanical Systems*; Level: Undergraduate; Spring 2011; Department of Mechanical Engineering; University of California, Berkeley.
- *2010 **Graduate Teaching Assistant:** Course: *Measurement Systems for Mechatronics*; Level: Undergraduate; Spring 2010; Department of Mechanical Engineering; University of California, Berkeley.
- *2009 **Graduate Teaching Assistant:** Course: *Experimentation and Measurements*; Level: Undergraduate; Fall 2009; Department of Mechanical Engineering; University of California, Berkeley.
Graduate Teaching Assistant: Course: *Experimentation and Measurements*; Level: Undergraduate; Spring 2009; Department of Mechanical Engineering; University of California, Berkeley.
- *2008 **Graduate Teaching Assistant:** Course: *Experimentation and Measurements*; Level: Undergraduate; Fall 2008; Department of Mechanical Engineering; University of California, Berkeley.

Journal And Peer-Review Service

Journal Editorial Board

- 2023–2024 **Guest Editor:** *Special Issue on Education in Biomechanics; ASME Journal of Biomechanical Engineering.*
- 2020 – present **Editorial Board Member: Review Editor:** *Computational Physiology and Medicine*; speciality section of *Frontiers in Bioengineering and Biotechnology* and *Frontiers in Physiology.*

Proposal Reviews

- 2024 **National Institutes of Health: MABS Study Section.**
Translational Research Institute for Space Health (TRISH).
- 2023 **National Institutes of Health: Selected as NIH Early Career Reviewer (ECR).**
University of Colorado Anschutz–Boulder (AB) Nexus Program.
ORAU Ralph Power Junior Faculty Enhancement Award Program.
Colorado Clinical and Translational Sciences Institute Grant Program.
National Science Foundation.
- 2022 **Colorado Clinical and Translational Sciences Institute Grant Program.**
University of Colorado Anschutz–Boulder (AB) Nexus Program.
- 2021 **ORAU Ralph Power Junior Faculty Enhancement Award Program.**
Colorado Clinical and Translational Sciences Institute Grant Program.
University of Colorado Undergraduate Research Opportunities Program.
University of Colorado Anschutz–Boulder (AB) Nexus Program.

Journal And Peer-Review Service (continued)

2019 **■** University of Colorado Research and Innovation Office (RIO) Seed Grant Program.

Journal Peer-Reviews

- ongoing **■** Reviewer (current and completed) for the following international journals:
- *Computational Mechanics*; *Journal of Computational Particle Mechanics*; *Journal of Biomechanical Engineering*; *Journal of Biomechanics*; *Cardiovascular Engineering and Technology*; *Biomechanics and Modeling in Mechanobiology*; *Annals of Biomedical Engineering*; *Computer Methods in Applied Mechanics and Engineering*; *Journal of Computational Physics*; *Engineering with Computers*; *International Journal for Numerical Methods in Biomedical Engineering*; *International Journal for Numerical Methods in Engineering*; *International Journal of Computational Fluid Dynamics*; *PLoS One*; *British Journal of Radiology*; *Current Opinion in Biomedical Engineering*; *Computer Modeling in Engineering and Science*; *Applied Mathematical Modeling*; *Journal of Neurovirology*; *Engineering Reports*; *AiChE Journal*.

Professional Service

Professional Societies

- 2021-present **■** **Member at Large:** United States Association of Computational Mechanics; Biological Systems Technical Thrust Area.

Conferences and Workshops

- 2024 **■** **Session Chair:** The 77th Annual Meeting of the American Physical Society Division of Fluid Dynamics; Session titled: *Physiological Fluid Mechanics IV: Large Vessels*. November 2024.
■ **Organizer:** *MechBio Symposium 2024*, an interdisciplinary thematic mechanobiology meeting at Boulder, Colorado. August 2024.
■ **Co-organizer:** *Minisymposium: Multiphysics and Data-driven Modeling for Cardiovascular Biomedicine* at the 16th World Congress on Computational Mechanics and 4th Pan American Congress on Computational Mechanics, Vancouver, Canada. July 2024.
- 2023 **■** **Session Chair:** The 76th Annual Meeting of the American Physical Society Division of Fluid Dynamics; Session titled: *Biofluids: Large Vessels and Arteries III*. November 2023.
■ **Organizer:** *Invited Session: Particle Based Models for Biological and Biomedical Systems* at the VIII International Conference on Particle-Based Methods, Milan, Italy. October 2023.
■ **Session Chair:** The Summer Biomechanics, Bioengineering and Biotransport Conference (SB3C), Vail, Colorado. Track: *PhD-Level Student Paper Competition: Multiscale Biomechanics and Fluid Dynamics/Transport*. June 2023.
■ **Session Chair:** The Summer Biomechanics, Bioengineering and Biotransport Conference (SB3C), Vail, Colorado. Track: *Thrombosis and Hemolysis*. June 2023.
■ **Review Committee Member:** The Summer Biomechanics, Bioengineering and Biotransport Conference (SB3C), Vail, Colorado. June 2023.
■ **Co-organizer:** *Minisymposium: Multiphysics and Data-driven Modeling for Cardiovascular Biomedicine* at the 2023 United States National Congress on Computational Mechanics (USNCCM), Albuquerque, New Mexico. July 2022.
- 2022 **■** **Judge: Gallery of Fluid Mechanics:** The 75th Annual Meeting of the American Physical Society Division of Fluid Dynamics. November 2022.
■ **Session Chair:** The 75th Annual Meeting of the American Physical Society Division of Fluid Dynamics; Session titled: *Cardiac and Cardiovascular Mechanics*. November 2022.
■ **Co-organizer:** *The 8th Annual Rocky Mountain Fluid Mechanics Research Symposium* at Boulder, Colorado. August 2022.
■ **Co-organizer:** *Minisymposium: Multiphysics and Data-driven Modeling for Cardiovascular Biomedicine* at the 2022 World Congress on Computational Mechanics (WCCM), Japan (*held virtually*). July 2022.
■ **Judge:** Student Paper Competition: The Summer Biomechanics, Bioengineering, and Biotransport Conference (SB3C), Eastern Shore, Maryland. June 2022.

Professional Service (continued)

- 2021
- **Session chair:** The 74th Annual Meeting of the American Physical Society Division of Fluid Dynamics; Session titled: *Biological fluid dynamics: Physiological Large Vessels I*. November 2021.
 - **Co-organizer:** Workshop: *Remote and Online Teaching of Biomechanics and Mechanobiology Concepts*; The Summer Biomechanics, Bioengineering and Biotransport Conference (SB3C). June 2021. (held virtually).
 - **Session Chair:** The Summer Biomechanics, Bioengineering and Biotransport Conference (SB3C); Track: *Advances in Biomedical Engineering Education*; June 2021. (held virtually).
 - **Co-organizer:** *Minisymposium: Multiphysics and Data-driven Modeling for Cardiovascular Biomedicine* at the 2021 United States National Congress on Computational Mechanics (USNCCM). (held online).
- 2020
- **Co-chair:** *Curated Virtual Poster Walk* Poster Session at the CCTSI CU-CSU Summit VIII: Covid-19 and the Colorado Research Environment. August 2020. (held online).
 - **Co-organizer:** *Minisymposium: Computational Multiphysics Modeling of Cardiovascular Systems* at the 2020 World Congress on Computational Mechanics (WCCM). (held online).
 - **Review committee member:** The Summer Biomechanics, Bioengineering and Biotransport Conference (SB3C). June 2020. (held online).
- 2019
- **Co-organizer:** *Minisymposium: Computational Multiphysics Modeling of Cardiovascular Systems* at the 2019 United States National Congress on Computational Mechanics (USNCCM), Austin, Texas.
 - **Review committee member:** The Summer Biomechanics, Bioengineering and Biotransport Conference (SB3C), Seven springs, Pennsylvania. June 2019.
- 2018
- **Co-organizer:** *Minisymposium: Computational Multiphysics Modeling of Cardiovascular Systems* at the 2018 United States National Congress on Computational Mechanics (USNCCM), New York City, New York.
- 2016
- **Co-organizer:** Inaugural edition of the AmeriMech mechanobiology symposium titled *Putting Together The Cell Mechanome: Finding The Pieces, Building The Puzzle*, August 2016, San Diego, California.
- 2013
- **Co-organizer:** *The Berkeley-Stanford Computational Mechanics Festival (CompFest)* workshop, October, 2013, Berkeley, California.

Professional Memberships

- American Heart Association
- American Physical Society
- United States Association for Computational Mechanics
- American Society of Mechanical Engineers

Specific Professional Development And Training

*Specific activities that required dedicated time/resources, and/or involved a selection process.

- 2023
- **Faculty Success Program:** National Center for Faculty Development and Diversity.
- 2022
- **Scientific Communication Advances Research Excellence (SCOARE):** SciComm Mentoring Training Program.
 - **Learning By Design Fall 2022 Cohort:** University of Colorado Active Learning Academy funded by the National Science Foundation.
- 2020
- **PI Academy:** Research development training through Research and Innovation Office University of Colorado Boulder.
- 2015
- **Training in pedagogy:** Selected for the *Intensive College Level Teaching* program organized by the Postdoc Teaching Opportunities Program (PTOP); University of California, Berkeley; October 2015. (20/73 applicants selected).
- 2013
- **Training and pedagogy:** Selected as an institute fellow for the *Summer Institute for Preparing Future Faculty* by the Graduate Division, University of California, Berkeley.

Faculty Service

- 2024-2025 **Faculty Search Committee:** Computational engineering T/TT faculty search; Department of Mechanical Engineering; University of Colorado Boulder.
- 2024 - 2025 **Graduate Committee:** Department of Mechanical Engineering; University of Colorado Boulder.
- 2023-2024 **Faculty Lead:** Graduate Engineering Annual Research & Recruitment Symposium (GEARRS); Department of Mechanical Engineering; University of Colorado Boulder.
- Graduate Committee:** Department of Mechanical Engineering. University of Colorado Boulder.
- 2022-2023 **Faculty Co-Lead:** Graduate Engineering Annual Research & Recruitment Symposium (GEARRS); Department of Mechanical Engineering, University of Colorado Boulder.
- Graduate Committee:** Department of Mechanical Engineering; University of Colorado Boulder.
- 2021-2022 **Faculty Search Committee:** Fluids teaching faculty search; Department of Mechanical Engineering, University of Colorado Boulder.
- 2020-2021 **Graduate Committee:** Department of Mechanical Engineering, University of Colorado Boulder.
- Organizer:** *ME Distinguished Zoominar Series*, Department of Mechanical Engineering, University of Colorado Boulder.
- 2019-2020 **Faculty Lead:** Oral Preliminary Examination Committee; Fluid Mechanics; Department of Mechanical Engineering, University of Colorado Boulder.
- Graduate Committee:** Department of Mechanical Engineering, University of Colorado Boulder.
- Organizer:** *Distinguished Seminar Series*, Department of Mechanical Engineering, University of Colorado Boulder.
- 2018-2019 **Graduate Committee:** Department of Mechanical Engineering, University of Colorado Boulder.
- Faculty Lead:** Oral Preliminary Examination Committee; Fluid Mechanics; Department of Mechanical Engineering, University of Colorado Boulder.

Student Service

Ph.D. Dissertation Committee

- 2024 **Zachariah Irwin:** Mechanical Engineering, University of Colorado Boulder.
Advisor: Prof. Richard Regueiro; Defense: October 2024.
Title: *A Multiphase Continuum Mechanics Model For Shock Loading Of Soft Porous Materials.*
- 2023 **Lawrence Smith:** Mechanical Engineering, University of Colorado Boulder.
Advisor: Prof. Robert MacCurdy; Defense: July 2023.
Title: *Stretching the Boundary: Computational Design and Fabrication of Soft Systems.*
- Jake Castellini:** Mechanical Engineering, University of Colorado Boulder.
Advisor: Prof. Wangda Zuo; Defense: May 2023.
Title: *Moving Beyond Well Mixed Rooms: Developing Stochastic Surrogate Models To Predict In-Room Spatiotemporal Uncertainty In Airborne Contaminant Transport.*
- DeAnna Sewell Gilchrist:** Aerospace Engineering, University of Colorado Boulder.
Advisor: Prof. John Evans; Defense: May 2023.
Title: *Conservative and Free Stream Preserving Stabilized Finite Element Methods For Compressible Flow On Deforming Domains.*
- 2022 **Julia Marilyn Hartig:** Chemical and Biological Engineering, University of Colorado Boulder.
Advisor: Prof. Alan W. Weimer; Defense: July, 2022.
Title: *Characterization Of Continuous Spatial Particle Atomic Layer Deposition.*
- Michael Meehan:** Mechanical Engineering, University of Colorado Boulder.
Advisor: Prof. Peter Hamlington; Defense: May, 2022.
Title: *The Near-field Dynamics Of Buoyant Helium Plumes.*

Student Service (continued)

- 2021 **Julian Quick:** Mechanical Engineering, University of Colorado Boulder.
Advisor: Prof. Peter Hamlington; Defense: December, 2021.
Title: *Outer-loop Applications Of Computational Fluid Dynamics For Wind Energy Systems.*
- Corey W. Nelson:** Mechanical Engineering, University of Colorado Boulder.
Advisor: Prof. John A Evans; Defense: January, 2021.
Title: *Interactive Geometric Domain Iteration Of Massively Parallel CFD Simulations.*
- 2020 **Caelan Lapointe:** Mechanical Engineering, University of Colorado Boulder.
Advisor: Prof. Peter Hamlington; Defense: October, 2020.
Title: *Efficient Simulation Of Complex Fire Phenomena In OpenFOAM Using Adaptive Mesh Refinement.*
- Olga Doronina:** Mechanical Engineering, University of Colorado Boulder.
Advisor: Prof. Peter Hamlington; Defense: August, 2020.
Title: *Turbulence Model Development Using Approximate Bayesian Computation.*
- Xu Han:** Civil, Environmental, and Architectural Engineering, University of Colorado Boulder.
Advisor: Prof. Wangda Zuo; Defense: August, 2020.
Title: *Holistic Optimization Of Data Center Cooling Systems And Airflow Management.*

M.S. Thesis Committee

- 2022 **Nicholas Barancyk:** Mechanical Engineering, University of Colorado Boulder.
Advisor: Prof. Kyri Baker; Defense: November 2022.
- 2020 **Guoxiang (Grayson) Tong:** Mechanical Engineering, University of Colorado Boulder.
Advisor: Prof. John Evans; Defense: April 2020.
- 2019 **Samira Hajebrahimi:** Mechanical Engineering, University of Colorado Boulder.
Advisor: Prof. Maureen E. Lynch; Defense: July 2019.
- Matthew Hanley:** Mechanical Engineering, University of Colorado Boulder.
Advisor: Prof. Shalom Ruben; Defense: May 2019.

Ph.D. Preliminary and Comprehensive Exam Committee

- 2023 **Corey Lynn Murphy:** Computer Science, University of Colorado Boulder.
Preliminary/Area Exam Committee; Advisor: Prof. Elizabeth Bradley; Date: December 2023.
- Jennifer Miklaszewski:** Mechanical Engineering, University of Colorado Boulder.
Preliminary Exam Committee; Advisor: Prof. Peter Hamlington; Date: June 2023.
- Shreya Venkatesh:** Mechanical Engineering, University of Colorado Boulder.
Preliminary Exam Committee; Advisor: Prof. Maureen Lynch; Date: May 2023.
- Samantha Friess:** Mechanical Engineering, University of Colorado Boulder.
Preliminary Exam Committee; Advisor: Prof. John Evans; Date: April 2023.
- Nils Wunsch:** Aerospace Engineering, University of Colorado Boulder.
Comprehensive Exam Committee; Advisor: Prof. Kurt Maute; Date: April 2023.
- Lawrence Smith:** Mechanical Engineering, University of Colorado Boulder.
Comprehensive Exam Committee; Advisor: Prof. Robert MacCurdy; Date: February 2023.
- 2022 **Jake Castellini:** Mechanical Engineering, University of Colorado Boulder.
Comprehensive Exam Committee; Advisor: Prof. Wangda Zuo; Date: October 2022.
- DeAnna Sewell Gilchrist:** Aerospace Engineering, University of Colorado Boulder.
Comprehensive Exam Committee; Advisor: Prof. John Evans; Date: April 2022.
- Jake Castellini:** Mechanical Engineering, University of Colorado Boulder.
Preliminary Exam Committee; Advisor: Prof. Wangda Zuo; Date: February 2022.
- 2021 **Michael Meehan:** Mechanical Engineering, University of Colorado Boulder.
Comprehensive Exam Committee; Advisor: Prof. Peter Hamlington; Date: October 2021.
- Julia Marilyn Hartig:** Chemical and Biological Engineering, University of Colorado Boulder.
Comprehensive Exam Committee; Advisor: Prof. Alan Weimer; Date: May 2021.
- Julian Quick:** Mechanical Engineering, University of Colorado Boulder.
Comprehensive Exam Committee; Advisor: Prof. Peter Hamlington; Date: April 2021.
- 2020 **Lawrence Smith:** Mechanical Engineering, University of Colorado Boulder.
Preliminary Exam Committee; Advisor: Prof. Robert MacCurdy; Date: September 2020.

Student Service (continued)

- 2019
 - **Corey W. Nelson:** Mechanical Engineering, University of Colorado Boulder. Comprehensive Exam Committee; Advisor: Prof. John Evans; Date: May 2020.
 - **Xu Han:** Civil, Environmental, and Architectural Engineering, University of Colorado Boulder. Comprehensive Exam Committee; Advisor: Prof. Wangda Zuo; Date: January 2020.
 - **Jennifer Coulombe:** Interdisciplinary Quantitative Biology, University of Colorado Boulder. Preliminary Exam Committee; Advisor: Prof. Virginia Ferguson; Date: December 2019.
 - **Olga Doronina:** Mechanical Engineering, University of Colorado Boulder. Comprehensive Exam Committee; Advisor: Prof. Peter Hamlington; Date: December 2019.
 - **Caelan Lapointe:** Mechanical Engineering, University of Colorado Boulder. Comprehensive Exam Committee; Advisor: Prof. Peter Hamlington; Date: September 2019.
 - **Michael Meehan:** Mechanical Engineering, University of Colorado Boulder. Preliminary Exam Committee; Advisor: Prof. Peter Hamlington; Date: September 2019.

Outreach Activity

- 2023
 - **High School Research Visitor Program:** Organized and mentored 3 high school students from Boulder County schools for a long term research exposure and training program.
 - **Mentor:** The APS-DFD Peer Mentoring Program, organized by the American Physical Society Division of Fluid Dynamics.
 - **Mentor: Undergraduate exchange program:** Mentoring two international undergraduate exchange students Guillermo Munoz Ovejero and Alvaro Carpio Chicote.
 - **Faculty Advisor:** University of Colorado Boulder Chapter of the American Association of Engineers of Indian Origin (*AAEIO Buffs*).
 - **Panelist:** Invited panelist for an international panel discussion hosted by *Women For STEM India (WFSI)*. November 2023.
- 2022
 - **Founding Faculty Advisor:** University of Colorado Boulder Chapter of the American Association of Engineers of Indian Origin (*AAEIO Buffs*).
 - **Panelist:** The Diversity Panel Discussion: hosted by the Committee for Equity in Mechanical Engineering, at the 8th Annual Rocky Mountain Fluid Mechanics Research Symposium, Boulder, Colorado. August 2022.
 - **Mentor:** *The Diversity Mentor-Mentee Program* at The Summer Biomechanics, Bioengineering, and Biotransport Conference (SB3C), Eastern Shore, Maryland. June 2022.
 - **Mentor:** The CU Science Discovery Program, University of Colorado Boulder (*mentored four high school students*). June 2022.
 - **Mentor: Undergraduate exchange program:** Mentoring two international undergraduate exchange students Guillermo Munoz Ovejero and Alvaro Carpio Chicote.
 - **Panelist:** “*Sitting with BIPOC*” – panel discussion with students and faculty who identify as Black, Indigenous, and People of Color (BIPOC); Graduate Engineering Annual Research & Recruitment Symposium, February 2022.
- 2021
 - **Mentor:** The National Science Foundation S-STEM Program at University of Colorado Boulder.
- 2020
 - **Mentor:** The 2020 Mechanical Engineering Summer Program for Undergraduate Research (ME-SPUR) (*mentored two undergraduate researchers as part of this program*).
 - **Mentor:** The 2020 Ronald McNair Fellowship Program (*mentored one undergraduate student as part of this program over summer*).
 - **Diversity Panel Moderator:** *Diversity and Inclusion in the Fluid Mechanics Community*. The 6th Annual Rocky Mountain Fluid Mechanics Research Symposium, Boulder, CO, August 2020.
- 2019
 - **Mentor:** The CU Science Discovery Program, University of Colorado Boulder (*mentored two high school students*).

*Prior to Joining University of Colorado Boulder

- *2017
 - **Mentor:** *Transfer To Excellence Research Experience For Undergraduates (TTE-REU)* – mentored undergraduate exchange student Jocelyn Garduno.

Outreach Activity (continued)

- **Mentor:** *New York Academy of Sciences STEM Scholar Mentorship Program* - aimed at high-school STEM students from across the world.
- *2016 ■ **Mentor:** *Berkeley Engineering Research Experience For Teachers (BE-RET)* - mentored two K-12 educators as part of this program:
 - **Suzanne LeBaron:** science educator from Oakland High School District.
 - **Russell Bierle:** pre-service teacher from the CalTeach program at Berkeley.
- *2015 ■ **Mentor:** *Transfer To Excellence Research Experience For Undergraduates (TTE-REU)* - mentored undergraduate exchange student Tiffany Pan.
 - **Volunteer:** *Biomechanical Engineering in Healthcare* - an outreach event for middle school students organized through the Johns Hopkins Center for Talented Youth (JHU-CTY).
- *2014 ■ **Mentor:** *Transfer To Excellence Research Experience For Undergraduates (TTE-REU)* - mentored undergraduate exchange student Jose Padilla.
- *2012 ■ **Workshop Organizer:** *Discipline Cluster Workshop* for teaching conference aimed at training and mentoring first time graduate teaching assistants; GSI Teaching and Resource Center; University of California, Berkeley.
- *2010 ■ **Math Instructor:** *Pre-Collegiate Academy, Incentive Awards Program*, University of California, Berkeley - developed and taught a complete six-week course on calculus for this preparatory program for high-performing high school students from underserved communities.

References

- *References available upon request.*