

# Debanjan Mukherjee, Ph.D.

✉ debanjan@Colorado.Edu

🌐 <https://www.flowphysicslab.com/>

🌐 <https://www.debanjanmukherjee.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.
- 1998 – 2001    **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

- 2021    **2021 Cohort of Pandemic Hyper-accelerator for Science and Technology (PHAST)** for pandemic related research and innovation, Venture Partners, University of Colorado Boulder.
- 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: August 2018 issue of Annals of Biomedical Engineering** for 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

## Research Interests

- **Biomedical:** Image-based modeling for biofluids and biomechanics; Hemodynamics and vascular transport processes; Cerebrovascular flow; Biomechanics of cardiovascular diseases – stroke, thrombosis, embolisms; Cardiovascular biomedical device design; Biomedical image processing; Drug delivery.
- **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:** Multi-phase 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.

### Peer-Reviewed Journal Publications

- 2021    ■ Kang, T., Mukherjee, D., Kim, J.M., Park, K.Y., and Ryu, J. (2021). Effects Of Progressive Carotid Stenosis On The Hemodynamics Of The Circle of Willis: Aorta-to-Cerebral 3D Patient-Specific Simulation. *Engineering Applications of Computational Fluid Mechanics*. (accepted; in-press; open-access).
- Teeraratkul, C., Irwin, Z., Shadden, S.C., and Mukherjee, D. (2021). Computational Investigation Of Blood Flow And Flow-mediated Transport In Arterial Thrombus Neighborhood. *Biomechanics and Modeling in Mechanobiology*. 20:701-715. [pre-print: bioRxiv 2020.06.11.147488].
- Mukherjee, D. (2021) Developing Effective Screencast Modules For Teaching Computational Techniques In Remote Modalities. *Biomedical Engineering Education* 1(2):301-311.
- 2020    ■ Miller, S., Mukherjee, D., Wilson, J., Clements, N., and Steiner, C. (2020). 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. [pre-print: medRxiv 2020.07.04.20143123].
- 2018    ■ Mukherjee, D., Jani, N.D., Narvid, J., and Shadden, S.C. (2018). 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. [pre-print: bioRxiv-190579].  
*\*selected as journal cover feature for August 2018 issue of Annals of Biomedical Engineering*
- Mukherjee, D., and Shadden, S.C. (2018). Modeling Blood Flow Around A Thrombus Using A Hybrid Particle-Continuum Approach. *Biomechanics and Modeling in Mechanobiology*. 17(3):645-663.
- 2017    ■ Mukherjee, D., and Shadden, S.C. (2017). Inertial Particle Dynamics In Large Artery Flows – Implications For Modeling Arterial Embolisms. *Journal of Biomechanics*. 52(8):155-164.
- Casas, G.\*, Mukherjee, D.\*, Celigueta, M.A., Zohdi, T.I., and Onate, E. (2017). A Modular, Partitioned, Discrete Element Framework For Industrial Grain Distribution Systems With Rotating Machinery. *Journal of Computational Particle Mechanics*. 4(2):181-198.
- 2016    ■ Mukherjee, D., Jani, N., Selvaganesan, K., Weng, C.L., and Shadden, S.C. (2016). 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.

## Research Publications (continued)

- 2015 ■ **Mukherjee, D.**, Padilla, J., and Shadden, S.C. (2015). Numerical Investigation Of Fluid-particle Interactions For Embolic Stroke. *Theoretical and Computational Fluid Dynamics*. 30(1):23-39.
- **Mukherjee, D.**, and Zohdi, T.I. (2015). A Discrete Element Based Simulation Framework To Investigate Particulate Spray Deposition Processes. *Journal of Computational Physics*. 290:298-317.
- **Mukherjee, D.**, and Zohdi, T. I. (2015). Computational Modeling Of The Dynamics & Interference Effects Of An Erosive Granular Jet Impacting A Porous, Compliant Surface. *Granular Matter*. 17(2):231-252.
- **Mukherjee, D.**, Zaky, Z., Zohdi, T.I., Salama, A., and Sun, S. (2015). Investigation Of Guided Particle Transport For Noninvasive Healing Of Damaged Piping System Using Electro-Magneto-Mechanical Methods. *Journal of Society of Petroleum Engineers*. 20(4):872-883.
- 2014 ■ **Mukherjee, D.**, and Zohdi, T. I. (2014). Electromagnetic Control Of Charged Particulate Spray Systems - Models For Planning The Spray-gun Operations. *Computer-Aided Design*. 46:211-215.

## Peer-Reviewed Journal Publications (Submitted)

- Teeraratkul, C., and **Mukherjee, D.** Microstructure Aware Modeling Of Biochemical Transport In Arterial Blood Clots. (*in revision*) [*pre-print: bioRxiv 10.1101/2021.01.25.428179*].
- 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. (*in revision*).
- **Mukherjee, D.**, and Barker, A. Using Simulation Based Active Learning Strategies For Teaching Biofluids Concepts. (*under review*).
- 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. (*under review*).

## Peer-Reviewed Proceedings

- 2021 ■ Sahni, A., Pal, J., and **Mukherjee, D.** Assessing The Hemodynamic Influence Of Pulse Flow Modulation For Left Ventricular Assist Devices. *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. *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.** (2020). Parallel Implementation Of A Hybrid Particle-continuum Finite Element Framework For Blood Clot Biomechanics. *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.** (2020). Fluid-Structure Interaction Framework For Fluid Flow Through The Bone Lacunar-Canalicular System With Morphological Variations. *Proceedings of the Summer Biomechanics, Bioengineering, and Biotransport Conference, Vail, Colorado*.
- 2017 ■ **Mukherjee, D.**, and Shadden, S.C. (2017). Fictitious Domain Particle-Based Modeling For Thrombosis. *Proceedings of the Summer Biomechanics, Bioengineering, and Biotransport Conference, Tucson, Arizona*.
- **Mukherjee, D.**, Jani, N.D., and Shadden, S.C. (2017). Discrete Particle Modeling For Thrombotic And Embolic Phenomena In Arteries. *Proceedings of the 5th International Conference on Computational and Mathematical Biomedical Engineering, Pittsburgh, Pennsylvania*.
- 2016 ■ **Mukherjee, D.**, and Shadden, S.C. (2016). Towards Non-invasive, Computational Modeling Of The Transport Of Thrombo-Emboli And Athero-Emboli Along Arteries. *Proceedings of the Summer Biomechanics, Bioengineering and Biotransport Conference, National Harbor, Maryland*.
- 2015 ■ **Mukherjee, D.**, and Shadden, S.C. (2015). Insights Into The Hemodynamic Factors Affecting Embolus Transport For Stroke. *Proceedings of the Summer Biomechanics, Bioengineering and Biotransport Conference, Snowbird, Utah*.

## Research Publications (continued)

- 2013    **Mukherjee, D.**, and Zohdi, T.I. (2013). Computer Modeling and Simulation Framework for Particulate Spray Based Manufacturing Processes. *Proceedings of the ASME International Mechanical Engineering Congress & Exposition, San Diego, California.*
- 2010    **Mukherjee, D.**, and Mansour, A.E. (2010). Preliminary Concept and Feasibility Studies on Ocean Energy Device Design from Used Ships. *Proceedings of the 29th International Conference on Ocean & Offshore, and Arctic Engineering, Shanghai, China.*  
*\*Recipient of the OMAE 2010 Conference Best Paper Award.*

## Articles In Preparation

- Sahni, A., Pal, J., and **Mukherjee, D.** Characterizing The Relation Between Viscous Dissipation And Pulsation For Mechanical Circulation Support. (*in preparation*).
- Sahni, A., Pal, J., and **Mukherjee, D.** Quantitative Assessment Of Aortic Hemodynamics For Varying Left Ventricle Assist Device Graft Anastomosis And Flow Pulsation. (*in preparation*).

## Presentations

### Conference Presentations

- 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. (*submitted*)
- 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. (*submitted*)
- 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. (*submitted*)
- 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. (*submitted*)
- 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*).
- 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. (*accepted*).
- 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, Chicago, Illinois.* 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, Chicago, Illinois.* 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*)
- 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*)

## Presentations (continued)

- 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 due to Covid-19).
- 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 due to Covid-19).
- 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 due to Covid-19).
- 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).
- 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 Mophological 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)

- 2018
- **Mukherjee, D.**, and Shadden S.C. Hybrid Particle-continuum Computational Models For Thrombus Biomechanics. *The 13<sup>th</sup> 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. *70<sup>th</sup> 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 14<sup>th</sup> 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. *14<sup>th</sup> 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. *69<sup>th</sup> 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. *69<sup>th</sup> 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 5<sup>th</sup> 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 8<sup>th</sup> 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. *68<sup>th</sup> 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. *13<sup>th</sup> 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. *67<sup>th</sup> 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

- 2021
- *An Introduction To Particles In Cardiovascular Modeling* - invited lecture, IDEALab (<https://web.me.iastate.edu/idealab/>), Department of Mechanical Engineering, Iowa State University.
  - *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.
- 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.

## Presentations (continued)

- 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

- VCPrePost:** Open source package for facilitating particle-based modeling in biological flows.  
**Role:** Creator, developer, maintainer.  
**Link:** <https://gitlab.com/dbnjin/vcprepost-release>

## Research Funding

### Completed

- 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
- 2020 - 2021
- 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.

### Ongoing

- 2020 - 2023
- 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
- 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
  - 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.

## Research Supervision

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### Principal Advisor: Ph.D. - Ongoing

- 2021 - present    **Joseph Wilson:** Mechanical Engineering, University of Colorado Boulder.  
                         **Ricardo Roopnarinesingh:** Mechanical Engineering, University of Colorado Boulder.
- 2020 - present    **Lindsey Nast:** Mechanical Engineering, University of Colorado Boulder.
- 2019 - present    **Chayut Teeraratkul:** Mechanical Engineering, University of Colorado Boulder.

### Principal Advisor: M.S. Thesis - Completed

- 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: PhD Program, University of Colorado Boulder
- 2019 - 2021    **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

- 2021 - present    **Thomas Puhr:** Mechanical Engineering, University of Colorado Boulder  
                         **Summer Andrews:** Mechanical Engineering, University of Colorado Boulder
- 2019 - present    **Akshita Sahni:** Mechanical Engineering, University of Colorado Boulder.

### Principal Advisor: M.S. - Completed

- 2019-2020    **Shailesh B. Khadangale:** Mechanical Engineering, University of Colorado Boulder.  
                         **Zachariah Irwin:** Mechanical Engineering, University of Colorado Boulder.

### Principal Advisor: Undergraduate

- 2021 - present    **Kelly Cao:** Biomedical Engineering, University of Colorado Boulder.  
                         **Argudit Chauhan:** Biomedical Engineering (pre-med), University of Colorado Boulder.
- 2020 - present    **Autumn Marie Zemlicka:** Mechanical Engineering, University of Colorado Boulder.  
                         **Andrew Beiter:** 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.

### \*Prior to Joining University of Colorado Boulder

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

## Teaching

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### Lecture-Based Courses

- 2021    **MCEN 4228/5228-003: Computational Fluid Dynamics; Spring 2021**

## Teaching (continued)

- 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

- 2020    **Akshita Sahni**: Spring 2020.  
Topic: *Image-based Modeling in Biomechanics*.

## Undergraduate Independent Study Supervision

- 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

- 2020    **MCEN 4228/5228-003: Fall 2020**; Mechanical Engineering; University of Colorado Boulder  
Guest lecture titled “*Hemodynamic Phenomena in Microfluidic Systems: An Overview*”
- 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

- \*2015    **Training and 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).
- \*2014    **Instructor**: Bootcamp session on *Basics of MATLAB Programming* for students at the Transfer To Excellence Research Experience for Undergraduates (TTE REU) program; University of California, Berkeley. [*summer*]
- Guest Lecturer**: *Software Tools for Hemodynamics Modeling*; for graduate course titled Fluid Mechanics of Biological Systems; Department of Mechanical Engineering; University of California, Berkeley. [*spring*]
- \*2013    **Instructor and Co-organizer**: Freshman Energy Engineering Seminar Series; College of Engineering; University of California, Berkeley. [*fall*]
- Training and pedagogy**: Selected as an institute fellow for the *summer Institute for Preparing Future Faculty* by the Graduate Division, University of California, Berkeley.
- Capstone Mentor**: Mentor and supervisor for capstone project on gas turbine blade thermomechanical design with Siemens Corporation; Department of Mechanical Engineering; University of California, Berkeley. [*spring*]
- \*2012    **Graduate Teaching Assistant**: Course title: *Computational Design of Multi-functional Materials*; Level: *graduate*; Mechanical Engineering; University of California, Berkeley. [*spring*]
- Graduate Teaching Assistant**: Course title: *Graduate Introduction to Finite Element Analysis*; Level: *graduate*; Mechanical Engineering; University of California, Berkeley. [*fall*]
- Capstone Mentor**: Mentor and supervisor for capstone project on gas turbine blade thermomechanical design with Siemens Corporation; Department of Mechanical Engineering; University of California, Berkeley. [*fall*]
- \*2011    **Graduate Teaching Assistant**: Course title: *Microprocessor Based Mechanical Systems*; Level: *undergraduate*; Mechanical Engineering; University of California, Berkeley. [*spring*]
- \*2010    **Graduate Teaching Assistant**: Course title: *Measurement Systems for Mechatronics*; Level: *undergraduate*; Mechanical Engineering; University of California, Berkeley. [*spring*]

## Teaching (continued)

- \*2009    **Graduate Teaching Assistant:** Course title: *Experimentation and Measurements*; Level: *undergraduate*; Mechanical Engineering; University of California, Berkeley. [*fall*]
- Graduate Teaching Assistant:** Course title: *Experimentation and Measurements*; Level: *undergraduate*; Mechanical Engineering; University of California, Berkeley. [*spring*]
- \*2008    **Graduate Teaching Assistant:** Course title: *Experimentation and Measurements*; Level: *undergraduate*; Mechanical Engineering; University of California, Berkeley. [*fall*]

## Journal And Peer-Review Service

### Journal Editorial Board

- 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

- 2021    **Review Panel:** University of Colorado Undergraduate Research Opportunities Program (UROP).
- Review Panel:** University of Colorado Anschutz–Boulder (AB) Nexus Program.
- 2019    **Review Panel:** 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 Computational Physics*;
  - *Journal of Biomechanical Engineering*;
  - *British Journal of Radiology*;
  - *International Journal for Numerical Methods in Engineering*;
  - *PLoS One*;
  - *Journal of Biomechanics*;
  - *Current Opinion in Biomedical Engineering*;
  - *Computer Modeling in Engineering and Science*;
  - *Cardiovascular Engineering and Technology*;
  - *Applied Mathematical Modeling*;
  - *Biomechanics and Modeling in Mechanobiology*;
  - *Annals of Biomedical Engineering*;
  - *International Journal for Numerical Methods in Biomedical Engineering*;
  - *Journal of Neurovirology*;
  - *Computer Methods in Applied Mechanics and Engineering*;
  - *Engineering Reports*;
  - *AiChE Journal*.

## Professional Service

### Conferences and Workshops

- 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, Chicago (*held virtually*).

## Professional Service (continued)

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- 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, Paris, France. (*held online*).
- **Review committee member:** *The Summer Biomechanics, Bioengineering and Biotransport Conference (SB3C)* 2020, Vail, Colorado (*held online*).
- 2019 ■ **Co-organizer:** *Minisymposium: Computational Multiphysics Modeling of Cardiovascular Systems* at the 2019 United States National Congress on Computational Mechanics, Austin, Texas.
- **Review committee member:** *The Summer Biomechanics, Bioengineering and Biotransport Conference (SB3C)* 2019, Seven springs, Pennsylvania.
- 2018 ■ **Co-organizer:** *Minisymposium: Computational Multiphysics Modeling of Cardiovascular Systems* at the 2018 United States National Congress on Computational Mechanics, 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
- Biomedical Engineering Society
- American Physical Society
- United States Association for Computational Mechanics

## Faculty Service

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- 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

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### Ph.D. Dissertation Committee

- 2021 ■ **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.*

## Student Service (continued)

- **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

- 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

- 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 McCurdy; Date: September 2020.
- **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
- 2019 ■ **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

- 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.
- **Mentor:** *New York Academy of Sciences STEM Scholar Mentorship Program* – aimed at high-school STEM students from across the world. 13

## Outreach Activity (continued)

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- \*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

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- *References available upon request.*