

Jamasp Jimmy Azarnoosh

Department of Bioengineering, University of Maryland, College Park

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EDUCATION

- 2016–2020 **Ph.D.**, University of Texas at Dallas, Dept of Mechanical Engineering
 2014–2016 **M.S.**, University of Tennessee at Chattanooga, Dept of Computational Engineering
 2007–2012 **B.S.**, Azad University of Tehran, Central Branch, Dept of Mechanical Engineering

POSTDOCTORAL FELLOWSHIPS

- 2021–2022 Medical College of Wisconsin, Dept of Biomedical Engineering
 2020–2021 Marquette University, Dept of Biomedical Engineering

EMPLOYMENT

- 2024–Present **Faculty Instructor (Lecturer)**, University of Maryland, College Park, Fischell Department of Bioengineering in the Biocomputational Engineering Program
- Instructing undergraduate courses at junior and senior levels
 - Mentoring undergraduate students in research and professional development
 - Contributed to program growth with curriculum and outreach efforts
- 2022–2024 **Senior Researcher**, Northeast Georgia Health System, Georgia Heart Institute
- Developed a fully automated framework for coronary artery reconstruction
 - Performed CFD simulation of blood flow in the coronary arteries
 - Medical image processing, machine learning, and data analysis
- 2020–2022 **Postdoctoral Scholar**, Marquette University and Medical College of Wisconsin, Joint Department of Biomedical Engineering
- CFD/FSI simulation of blood flow in the aorta
 - Material testing of biological tissues
 - Medical image processing and data analysis
- 2016–2020 **Graduate Assistant (Research and Teaching)**, University of Texas at Dallas, Department of Mechanical Engineering
- Fluid-structure interaction (FSI) simulation of human breastfeeding
 - Thermography and thermal imaging integration with ANSYS models
 - Instructed undergraduate laboratory courses and served as a Teaching Assistant for five semesters

- 2014–2016 **Graduate Research Assistant**, University of Tennessee at Chattanooga,
Center of Excellence in Applied Computational Science and Engineering
- Reconstructed 3D airway geometries for CFD simulations
 - Simulated airflow in oro-pharyngeal-laryngeal regions
 - Applied LES to model turbulence in the human respiratory tract

TEACHING EXPERIENCE

INSTRUCTOR

University of Maryland, College Park

Aug 2024 – Present

Semester	Course	Title	#
Fall 2026	ENBC332	Statistics, Data Analysis, and Data Visualization	9
Fall 2026	ENBC425	Imaging and Image Processing	7
Fall 2026	ENBC399	Independent Study	3
Summer 2026	BIOE442/BIOE658	Python: Introduction to Programming	11
Spring 2026	ENBC321/BIOE658	Machine Learning for Data Analysis	16
Spring 2026	ENBC402	Applied Numerical Methods	6
Spring 2026	ENBC403	Research Methods in Biological Data Mining	6
Fall 2025	ENBC332	Statistics, Data Analysis, and Data Visualization	3
Fall 2025	ENBC425	Imaging and Image Processing	7
Fall 2025	ENBC399	Independent Study	1
Spring 2025	ENBC321	Machine Learning for Data Analysis	7
Spring 2025	ENBC403	Research Methods in Biological Data Mining	2
Fall 2024	ENBC332	Statistics, Data Analysis, and Data Visualization	7

TEACHING ASSISTANT

The University of Texas at Dallas

Aug 2018 – May 2020

Semester	Course	Title	Enrollment
Spring 2020	MECH4380	Heating, Ventilation, and Air Conditioning	60
Fall 2019	MECH3120	Computational/Simulation Heat Transfer Lab	48
Summer 2019	MECH4380	Heating, Ventilation, and Air Conditioning	42
Spring 2019	MECH4380	Heating, Ventilation, and Air Conditioning	60
Spring 2019	MECH3120	Computational/Simulation Heat Transfer Lab	12
Fall 2018	MECH3370	Applied Thermodynamics	60
Fall 2018	MECH3120	Computational/Simulation Heat Transfer Lab	19
Spring 2018	MECH4380	Heating, Ventilation, and Air Conditioning	60

MENTORSHIP AND SUPERVISION

University of Maryland, College Park

Aug 2024 – Present

- Mentoring and guiding undergraduate students in their academic and professional development within the Biocomputational Engineering program.

University of Texas at Dallas

Aug 2017 – July 2019

- Supervised two Master's student projects in computational biomechanics.

AWARDS AND HONORS

- 2024 BIOE Instructional Impact Award Nomination, University of Maryland, College Park, MD
- 2022 Best Scientific Image, 2nd place, Medical College of Wisconsin, Milwaukee WI
- 2021 American Society of Cataract and Refractive Surgery (ASCRS), 3rd place, Las Vegas NV
- 2020 Big Idea Competition, 1st place, The University of Texas at Dallas, Richardson TX
- 2019 Ph.D. Research Small Grants Program at UTD, Richardson, TX
- 2019 Flow Visualization Competition, ASME AJKFluids Engineering, San Francisco, CA
- 2019 Honorable mention in the Spring 2019 Poster Competition at UTD, Richardson, TX
- 2018 Ph.D. Research Small Grants Program at UTD, Richardson, TX
- 2018 Betty and Gifford Johnson Student Travel Award, Richardson, TX

RESEARCH INTERESTS

- Computational biomechanics of human health and disease
- Machine learning for biomedical image processing
- Biofluid dynamics and fluid–structure interaction
- Biocomputational engineering and translational applications

RESEARCH PROJECT

- American Heart Association - Postdoctoral Fellowship for the Children's Heart Foundation (CHF): *"Temporal characterization of mechanical stimuli and arterial remodeling from coarctation severity experienced clinically"*, 09/21/2021
- American Heart Association - Postdoctoral Fellowship: *"Temporal characterization of mechanical stimuli and arterial remodeling from coarctation severity experienced clinically"*, 09/15/2021
- The University of Texas at Dallas - Research Dissertation Award: Funded to Jimmy Azarnoosh: *"Biomechanics of Breastfeeding"*, 05/14/2019
- National Science Foundation (NSF) - 1454334: Ph.D. research project funded to Fatemeh Hasanipour (The University of Texas at Dallas): *"Biofluid Dynamics of the Human Breast: Characterization and Fluid-Structure Interaction"*, 01/16/2015 – 06/30/2021

SERVICE

DEPARTMENTAL SERVICE

- Committee Member, Community Engagement and Development, 2025 – Present
- Mentoring undergraduate students in the Biocomputational Engineering program
- Technical Service / HPC Management for Lambda Vector GPUs
 - Maintained and managed the Biocomputational Engineering program supercomputer
 - Ensured availability and performance for research and teaching activities
 - Developed instructions and documentation for logging in and using the system
 - Created a dedicated webpage for the system on the Biocomputational Engineering website
 - Established a specific email for users to address questions and issues with GPU usage
 - Assisted students and faculty with computational resource usage
- Design and development of a new course "Applied Numerical Methods in Biomechanical Modeling", including lectures and computational resources such as Zaratan cluster and Lambda Vector.

OUTREACH AND PROGRAM PROMOTION

- Program Presentation Contributions
 - Assisted in improving slides for the Biocomputational Engineering program information talk
 - Prepared a promotional video for the program in collaboration with the program coordinator
 - Edited the video to enhance professionalism and presentation quality
- Maryland Day, prepared presentations and videos for the event, April 2025
- UMD STEM Expo, April 2025
- Northwest High School Academy of Biotech Visit, presentation for students, March 2025
- Counselor and Advisor Preview Day, March 2025
- Poolesville event, presented a lecture for students, November 2024

EXTERNAL SERVICE

Track/Session Organizer:

- Session co-chair, Computational and Multiscale Modeling in Biomechanics, BMES, Oct 2022
- Session co-chair, Patient-Specific Flow and Physiology, SB³C 2022, June 2022
- Session co-chair, Emerging In Vitro, Experimental, Computational, and Visualization Methods in Biofluid Mechanics, SB³C 2021, June 2021

Judge:

- A. James Clark School of Engineering Capstone Design Expo, University of Maryland, College Park, May 2025
- Poster session judge, 32nd Annual Graduate School and Office of Postdoctoral Education, Medical College of Wisconsin, 2024
- Poster session judge, 2022 Cardiovascular Center Research Retreat, Medical College of Wisconsin, Oct 2022

- Poster session judge, 31st Annual Graduate School and Office of Postdoctoral Education, Medical College of Wisconsin, Nov 2021
- Poster presentation evaluator, Summer Programs Symposium 2021, Medical College of Wisconsin, Aug 2021

Reviewer for:

- Journal of Artificial Intelligence in Medicine
- Journal of Computers & Fluids
- Journal of Biomechanics
- Journal of Mathematics and Computers in Simulation
- Biomedical Engineering Society (BMES) Conference

PROFESSIONAL MEMBERSHIPS

- Postdoc Advisory Committee (PAC), 2021 – 2022
- American Heart Association (AHA), Trainee Member, 2021 – 2022
- Biomedical Engineering Society (BMES), Early Career Member, 2021 – Present
- American Society of Mechanical Engineers (ASME), 2018 – Present

PROFESSIONAL DEVELOPMENT

- National Postdoctoral Association (NPA) SmartSkills, professional development training, 2022
- Methods in Grant Preparation for the National Institutes of Health (NIH), Milwaukee, WI, 2021
- Graduate Teaching Seminar, The University of Texas at Dallas, Richardson, TX, 2019
- Introduction to FEM, BEM, and MM — three-day course, The University of Nevada, Las Vegas, NV, 2019

TECHNICAL SKILLS

- Programming: Python, MATLAB, C/C++, Shell scripting, R
- Data Analysis and Statistics
- Artificial Intelligence and Machine Learning
- Medical Image Processing
- Computer-Aided Design (CAD)
- Numerical Methods: Fluid-Structure Interaction (FSI), Computational Fluid Dynamics (CFD), Finite Element Analysis (FEA)

US PATENTS

1. Kooner, K. S., Mong, M. A., Al-Humimat, G., Awkal, J. A., Abdallah, H. G., **Azarnoosh, J.**, Le, N. L., Reyntjens, P. D. J., Warren, J. L. “*Forceps*.” U.S. Patent No. USD1010123S1, 2024

2. Kooner, K. S., Mong, M. A., Al-Humimat, G., Awkal, J. A., Abdallah, H. G., **Azarnoosh, J.**, Le, N. L., Reyntjens, P. D. J., Warren, J. L. “*Eye Shunt System and Methods.*” U.S. Patent No. 20230255825A1, 2023

PEER-REVIEWED JOURNAL PUBLICATIONS

1. Ghorbannia, A., **Azarnoosh, J.**, and LaDisa, J. F., “Severity and duration-dependent aortic stiffening in a rabbit coarctation model identifies constitutive material parameters as promising regional biomarkers for hypertension progression,” *Scientific Reports*, 2026.
2. Thomas, J., Gilbert, B., Siezen, H., Ma, L., **Azarnoosh, J.**, and Rodd, B., “Leveraging PR-isometric guided deep learning to decode CT-based tumor heterogeneity and enhanced NSCLC prognosis,” *American Association for Cancer Research*, vol. 86, 2026, pp. 2792-2792.
3. Molony, D. S., Hung, O., Corban, M., Gogas, B., Lefieux, A., Shah, I., Komilian, K., Adams, A., Sykalo, C., Dodoo, S., Kumar, A., Kumar, S., **Azarnoosh, J.**, Piccinelli, M., McDaniel, M. C., King, S. B., Maynard, C., Chatzizisis, Y. S., Chen, S.-L., Shin, E.-S., and Samady, H., “A randomized prospective study investigating the relationship between post-PCI wall shear stress and 12-month neointimal healing: The SHEAR-STENT study,” *Cardiovascular Revascularization Medicine*, 2025.
4. **Azarnoosh, J.**, Ghorbannia, A., Ibrahim, E. S. H., Jurkiewicz, H., Kalvin, L., and LaDisa, J. F., “Temporal evolution of mechanical stimuli from vascular remodeling in response to the severity and duration of aortic coarctation in a preclinical model,” *Scientific Reports*, vol. 13, 2023, pp. 1-12.
5. **Azarnoosh, J.** and Hassanipour, F., “Fluid-structure interaction modeling of lactating breast: Newtonian vs. non-Newtonian milk,” *Journal of Biomechanics*, vol. 124, 2021, pp. 1-10.
6. Lozano, A., Hayes, J. C., Compton, L. M., **Azarnoosh, J.**, and Hassanipour, F., “Determining the thermal characteristics of breast cancer based on high-resolution infrared imaging, 3D breast scans, and magnetic resonance imaging,” *Scientific Reports*, vol. 10, 2020, pp. 1-14.
7. **Azarnoosh, J.** and Hassanipour, F., “Fluid-structure interaction modeling of lactating breast,” *Journal of Biomechanics*, vol. 103, 2020, pp. 1-9.
8. **Azarnoosh, J.**, Sreenivas, K., and Arabshahi, A., “Numerical simulation of tidal breathing through the human respiratory tract,” *Journal of Biomechanical Engineering*, vol. 142, no. 6, 2020, pp. 1-8.

CONFERENCES AND PRESENTATIONS

1. Siezen, H., **Azarnoosh, J.**, Ma, L., Maldaguem X., and Rodd, B., “Chi-squared embedding to approximate low-rank representation of dynamic thermography for early breast cancer detection,” *SPIE: Thermosense, Thermal Infrared Applications XLVIII*, vol. 14038, 2026, pp. 135.
2. **Azarnoosh, J.**, Molony, D., Komilian, K., Soriano, L., Dornback, A., Jalal, S., Lee, B., Shaw, L., Dunham, S., Lin, F., Samady, H., “Comparison of Allometric Scaling Patterns for Esti-

- imating Coronary Flow,” *Transcatheter Cardiovascular Therapeutics (TCT)*, October 23-26, 2023, San Francisco, CA.
3. **Azarnoosh, J.**, Molony, D., Komilian, K., Soriano, L., Dornback, A., Jalal, S., Lee, B., Shaw, L., Dunham, S., Lin, F., Samady, H., “Comparison of Allometric Scaling Patterns for Estimating Coronary Flow,” Poster presentation at *Research and Innovation Month Multidisciplinary*, October 17, 2023, Gainesville, GA.
 4. Buitrago, L. D., **Azarnoosh, J.**, Maldague, X., Yousefi, B., “Optimal thermomic biomarkers for early diagnosis of breast cancer,” Poster presentation at *SPIE Defense + Commercial Sensing*, April 30 - May 4, 2023, Orlando, FL.
 5. **Azarnoosh, J.**, Ghorbannia, A., LaDisa, J. F., “Mechanical Characterization of Aortic Tissue from a Clinically-Representative Range of Coarctation,” Poster presentation at *Biomedical Engineering Society (BMES)*, October 12-15, 2022, San Antonio, TX.
 6. **Azarnoosh, J.**, Ghorbannia, A., LaDisa, J. F., “Image-based temporal quantification of Aortic coarctation within the range of severities and durations seen,” *SB³C2022, Summer Biomechanics, Bioengineering, and Biotransport Conference*, June 20-23, 2022, Cambridge, MD.
 7. **Azarnoosh, J.**, Ghorbannia, A., LaDisa, J. F., “Quantifying the Range of Mechanical Stimuli from the Severity and Duration of Aortic Coarctation that Prevents Permanent Vascular Remodeling,” *WCCM-APCOM*, July 31 - August 5, 2022, Yokohama, Japan.
 8. **Azarnoosh, J.**, “Biomechanics of breastfeeding: fluid-structure interaction simulation of milk expression,” Invited guest lecturer for *Transport Phenomena class* at Marquette University, April 29, 2021, Milwaukee, WI.
 9. **Azarnoosh, J.**, Hassanipour, F., “A comprehensive understanding of breastfeeding biomechanics,” Poster Competition presentation at the University of Texas at Dallas, April 18, 2019, Richardson, TX.
 10. **Azarnoosh, J.**, Hassanipour, F., “Effects of the non-Newtonian viscosity of milk flow in the breast ductal system,” *ASME IMECE conference*, November 11-14, 2019, Salt Lake City, UT.
 11. **Azarnoosh, J.**, Hassanipour, F., “Fluid-structure interaction simulation of lactating breastfeeding,” *8th Joint Fluids Engineering Conference*, July 29 - August 1, 2019, San Francisco, CA.
 12. **Azarnoosh, J.**, Hassanipour, F., “CFD simulation of lactating breast,” *The Bluebonnet Symposium on Thermal-Fluid Sciences*, April 27, 2018, Richardson, TX.
 13. **Azarnoosh, J.**, Sreenivas, K., Arabshahi, A., “CFD investigation of human tidal breathing through human airway geometry,” *The 16th International Conference on Computational Science*, June 6-8, 2016, San Diego, CA.
 14. **Azarnoosh, J.**, Sreenivas, K., Arabshahi, A., “CFD investigation of human tidal breathing through human airway geometry,” *UTC Research Dialogues*, The University of Tennessee at Chattanooga, April 13-14, 2016, Chattanooga, TN.