

# Tandralee Chetia

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CONTACT INFORMATION	Department of Mechanical Engineering ECME 217 & 1B64, University of Colorado Boulder Boulder, CO 80309-0427	<i>Phone:</i> (720) 843-9893 <i>E-mail:</i> tandralee.chetia@colorado.edu <a href="https://www.linkedin.com/in/tandralee-chetia-93973b173/">https://www.linkedin.com/in/tandralee-chetia-93973b173/</a>
EDUCATION	<b>University of Colorado Boulder</b> - Boulder, CO, US <i>MS, Mechanical Engineering, May, 2024</i> <ul style="list-style-type: none"><li>• Relevant Courses: Bio-fluids, Computational Fluid Dynamics, Cancer Mechanics, Anatomy and Physiology for Engineers, Flow Visualisation, Mechanics of Soft Matter</li><li>• Dissertation: <i>Benchmark models for understanding embolic stroke</i></li><li>• Advisor: Dr. Debanjan Mukherjee</li></ul> <b>Indian Institute of Space Science and Technology</b> - Thiruvananthapuram, Kerala, India <i>B.Tech., Aerospace Engineering, May, 2019</i> <ul style="list-style-type: none"><li>• Relevant Courses: Physics, Fluid Mechanics, Compressible Flow, Aerodynamics, Machine Design, Mechanics of Solids, Theory of Elasticity, Finite Element Method, Intro to Robotics</li><li>• Thesis: <i>Aerodynamic and Flight Dynamic Design and Analysis of a Flapping Wing</i></li><li>• Advisor: Dr. Dhayalan R. and Dr. Sreejalekshmi K.G.</li></ul>	
RESEARCH INTERESTS	Fluid Dynamics and Fluid-Structure Interactions; Hemodynamics and Vascular Transport Processes; Biomechanics of Cardiovascular Diseases and Cancer; Mechanics of Soft Matter; Computational Fluid Dynamics; Experimental Flow-loop Design; Drug-Delivery and Medical Devices	
SKILLS	<ul style="list-style-type: none"><li>• Languages: MATLAB, C, Python</li><li>• Software: Ansys, AutoCAD, CATIA, SolidWorks, Fenics, MS Office, LaTeX, Gmsh, Paraview, SimScale</li></ul>	
PROFESSIONAL EXPERIENCE	<b>Regeneron</b> - Tarrytown, NY, US <i>Graduate Intern</i> <ul style="list-style-type: none"><li>• Developed Computational Fluid Dynamic Model of Droplet Formation during Drug Product Filling using a Volume of Fluid Formulation in Ansys Fluent to optimize drug manufacturing processes</li><li>• Analyzed the differences in droplet properties with changes in drug properties in relation to physics of droplet formation</li><li>• Modeled a pump suck-back action as a solution to prevent clogging of filling needle after an interrupted filling cycle</li></ul> <b>ISRO Propulsion Complex</b> - Tirunelveli, Tamil Nadu, India <i>Scientist/Engineer 'SC'</i> <ul style="list-style-type: none"><li>• Engineered the Integrated Cryogenic Engine and Stage Test Facility for ISRO's Geo Synchronous Satellite Launch Vehicle</li><li>• Conducted computational fluid dynamic analysis of a pintle nozzle to optimize performance using Ansys Fluent</li><li>• Analyzed fluid flow data from cryogenic engine tests to understand reasons for test failure</li></ul>	<i>May, 2023 - Aug, 2023</i> <i>Aug, 2019 - Mar, 2022</i>

RESEARCH  
EXPERIENCE

- **Benchmark models for understanding embolic stroke**
  - Developing experimental arterial flow loop models to understand embolic pathways that can lead to stroke under the guidance of Dr. Debanjan Mukherjee
  - Designed and built prototypes for particle injection systems and implementation of windkessel models in vitro using 3D printing, laser cutting, SimScale flow analysis, etc.
  - Experience in using medical ultrasound and imaging tools to understand physiological flow profiles
  - Conducted experiments that showed that particles do not always distribute as per flow distributions
  - Studying the effect of soft particle deformability on particle flow pathways
- **Aerodynamic and Flight Dynamic Design and Analysis of a Flapping Wing**
  - Undertook aerodynamic and flight dynamic parametric studies using MATLAB to achieve an optimum design of a flapping wing micro air vehicle under the guidance of Dr. Dhayalan R. and Dr. Sreejalekshmi K.G
  - Studies showed the relation between wing aspect ratio, size, flapping amplitude on the aerodynamic forces and dynamic stability of the flapping wing
- **Other experiences**
  - Simplified CFD analysis of cancer vascular arrangements using Gmsh, Fenics and Paraview
  - Use of CircAdapt Simulator and Tissue Biomarkers to understand aortic valve stenosis
  - Design and development of a Colored-Cubes Sorting Robot
  - Development of a power-efficient hand-held lawn mower

TEACHING  
ASSISTANSHIP

- Assisted Dr. Sarah Calve by grading assignments for Fall 2022 Materials Science course and Dr. Eloise Bihar in content development for Spring 2023 Materials Science

JOURNAL  
ARTICLES

- **Chetia, T., Rajaram, D., Sreejalekshmi, K. G. (2022).** Aerodynamic and flight dynamic parametric studies of a flapping wing. *International Journal of Intelligent Unmanned Systems*, <https://doi.org/10.1108/ijius-06-2021-0039> . .

AWARDS &  
HONORS

1. Selected by the Regeneron University Relations team as a campus ambassador for Regeneron at CU Boulder
2. Student Leader (Vice-President for Events) at the CU Boulder chapter of the American Association of Engineers of Indian Origin (AAEIO). AAEIO was nominated for CU Involvement Awards - Community Action Award
3. Recipient of the MS Diversity Scholarship 2022-23 and MS Entrepreneurial Scholarship 2023-24 from the Paul M. Rady Mechanical Engineering Department at CU Boulder
4. Third prize in the market survey competition on "Innovative technologies for waste management in local markets" held in connection with the Cleanliness mission of the Indian Government

PROFESSIONAL  
SERVICE

1. MS student representative on the Graduate Committee for 2023-24 to represent students' voices and needs for the Mechanical Engineering Department at CU Boulder
2. Graduate member of the Aeronautical Society of India from 2020 to 2022

MENTORSHIP &  
OUTREACH

1. Mentored two undergraduate exchange students at Flow Physics Lab, CU Boulder to complete a study on effect of gravity on embolous transport
2. Handled logistics and content development for science and math support classes for students from financially challenged backgrounds and taught English communication skills to the female artisans of the Aftertaste Foundation as part of TribesforGood, India
3. Was involved in a marketing campaign to raise funds for the women's shelter Kshamata in Mumbai, India

4. Volunteered as a teacher and artist at the non-government organization 'Ayang' situated in Majuli, India