Ayaaz Yasin

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Cincinnati, OH

Education

PhD in Mechanical Engineering, Fall 2024 - present
University of Cincinnati, Cincinnati, OH

MS in Aerospace Engineering, 2024
University of Cincinnati, Cincinnati, OH
Thesis title: *Computational Modeling of Evaporation without Tuning Coefficients*

BS in Mechanical Engineering Technology, 2022
Minor in Mathematics,
University of Cincinnati, Cincinnati, OH
Senior project: *Aerodynamic Optimization of a Solar Car*

Notable Coursework - numerical methods for aerospace fluid mechanics, advanced numerical analysis, modeling & simulation of multi-physics systems, partial differential equations & Fourier analysis, complex analysis, statistical thermodynamics.

Peer-Reviewed Publications
***equal contribution authors**

2. **A. Yasin** and K. Bellur, *Computational modeling of evaporation without tuning coefficients.* **(manuscript in preparation)**

1. U. Chakrabarti*, **A. Yasin***, K. Bellur, and J. Allen, *An investigation of phase change induced Marangoni-dominated flow patterns using the Constrained Vapor Bubble Data from ISS experiments*, Frontiers in Space Technologies - Microgravity. Volume 4 - 2023, doi: 10.3389/frspt.2023.1263496.

Conference Presentations

7. **A. Yasin** and K. Bellur, *Exploring two-dimensional flows in evaporating thin films: A step towards a dynamic model*, 10th ASTFE Thermal and Fluids Engineering Conference, 09-12 March 2025, Washington, DC. **(accepted)**

6. **A. Yasin** and K. Bellur, *Modeling of evaporation in cryogenic fuels without tuning coefficients*, 35th NASA Thermal and Fluids Analysis Workshop, 26-30 August 2024, Cleveland, OH. **(presentation & poster)**

5. **A. Yasin** and K. Bellur, *Modeling evaporation without tuning coefficients*, 51st Midwestern University Fluid Mechanics Retreat, 12-14 April 2023, Rochester, IN.

4. **A. Yasin**, and K. Bellur, *A numerical study of coefficient-free kinetic evaporation modeling in liquid Hydrogen*, 76th American Physical Society Division of Fluid Dynamics Annual Meeting, 19-21 November 2023, Washington, D.C.

3. **A. Yasin**, U. Chakrabarti, K. Bellur, and J. Allen, *An investigation of Marangoni induced flow in Constrained Vapor Bubble ISS experiments*, 50th Midwestern University Fluid Mechanics Retreat, 13-15 April 2023, Rochester, IN.

2. **A. Yasin**, and K. Bellur, *A CFD model of evaporation in liquid Hydrogen without the need for tuning coefficients*, 75th American Physical Society Division of Fluid Dynamics Annual Meeting, 20-22 November 2022, Indianapolis, IN. **(poster)**

1. **A. Yasin**, R. Gilligan, D. Heitmeyer, and K. Cohen, *A solution to the 2022 AUVSI Student Unmanned Aerial Systems competition*, AIAA Region III Student Conference, 23 March 2022, Purdue University, West Lafayette, IN.

Honors and Awards

Excellence in Teaching Award – Honorable Mention 2024
Awarded by the University of Cincinnati Graduate College

Travel Grant – American Physical Society 2023
Funding to present at the Division of Fluid Dynamics conference.

Graduate Assistant Scholarship 2023, 2024
Awarded by the UC Department of Engineering and Computing Education

P&G Simulation Center Student Support Scholarship 2022
Partial graduate funding

Graduate Incentive Scholarship 2022 - 2024
Partial graduate funding by the UC Department of Aerospace Engineering

Several conference travel awards 2022 - 2024
Awarded by the UC Graduate College

Undergraduate Research Fellowship 2022
Awarded by the UC Office of Research

Outstanding Senior Award 2022
Awarded by the UC College of Engineering and Applied Science

UC Global Outreach Scholarship 2015
Awarded by the University of Cincinnati

Teaching Experience

As instructor of record

3. MET 4076: Applied Computational Methods Spring 2025
2. ENED 1120: Foundations of Engineering Design Thinking II Spring 2024
1. ENED 1100: Foundations of Engineering Design Thinking I Spring 2023, Fall 2023

As teaching assistant

2. ENED 1120: Foundations of Engineering Design Thinking II Spring 2022
1. ENED 1100: Foundations of Engineering Design Thinking I Fall 2020, Fall 2021

Mentoring & Supervision

- Served as mentor for students in the First-Year Engineering Program, 2023-2024.
- Supervised a team of six undergraduate and two graduate teaching assistants, 2023-2024.

Professional Experience

Graduate Student and Research Assistant, 2022 - present
UC Lab for Interfacial Dynamics, advised by Dr. Kishan Bellur
Department of Mechanical Engineering, University of Cincinnati

- Investigation of phase change driven oscillations in liquid thin films.
- Modeling acoustic propagation in the ISS Flow Boiling & Condensation Experiment.
- Development of a tuning coefficient-free computational model of evaporation.
- Computational investigation of phase change driven surface-flow phenomena in microgravity using data from ISS Constrained Vapor Bubble experiments.

Instructor Spring 2025
Department of Mechanical & Materials Engineering
University of Cincinnati, Cincinnati, OH

Instructor Fall 2023 - Spring 2024
Department of Engineering & Computing Education
University of Cincinnati, Cincinnati, OH

Research Assistant, P&G Digital Accelerator Fall 2022
Department of Mechanical Engineering, University of Cincinnati, Cincinnati, OH
in collaboration with The Procter and Gamble Company.
- Implementation of heuristic and genetic algorithms for computing *arbitrarily oriented bounding boxes*.

Student Worker, **Ohio Innocence Project** Summer 2022
University of Cincinnati, Cincinnati, OH

Product Development Engineering Co-op Spring 2021 - Summer 2021
GMi Companies, Lebanon, OH

Manufacturing Engineering Co-op Spring 2019, Fall 2019
Regal Beloit Corporation, Florence, KY

Research and Development Intern Spring 2018 - Summer 2018
3D Paradise, New Delhi, India

Engineering Intern Spring 2017 - Summer 2017
Shaperjet, New Delhi, India

Student Teams

UC Aerial Vehicles Team, President 2021 - 2022
- UAV competition team; placed 9th out of 71 teams in the AUVSI SUAS competition. Project advisor: Dr. Kelly Cohen.

UC Solar Car Team, Mechanical and Aerodynamics Lead 2021 - 2022
- Competition team in the American Solar Challenge. Project advisors: Dr. Muthar al-Ubaidi and Dr. Alex Wouden.

FlyUC, President and Propulsion Lead 2019 - 2020
- Student team in the GoFly competition. Project advisor: Dr. Shabaan Abdallah.

Computer Skills

Programming: MATLAB, C, C++, Python, VBA, HTML, Git/GitHub, LaTeX.
Modeling: Ansys Fluent, SolidWorks, OpenFOAM, Star CCM+, Simcenter 3D, COMSOL Multiphysics, LabVIEW.

Extra-Curriculars

Hindustani classical music – Studying Tabla under Prof. James Feist at the UC College-Conservatory of Music since 2019. Performed at recitals and music conferences.

Taekwondo – 4th Dan Kukkiwon black belt. Served as a junior instructor and president of the UC Taekwondo Club, 2020-2022.

Amateur radio – Technician-class amateur radio operator, FCC callsign: KE8WUP. Volunteer radio operator for the Queen City Emergency Net.

Volunteer interviewer for the **1947 Partition Archive**. Conducted interviews of the eyewitnesses of the *Partition of India*, in India and Canada.