Jonathan Woo

Email: jonwoo@g.ucla.edu | Mobile: (949) 356 8139

Education

University of California, Los Angeles — Los Angeles, California, USA
Bachelor of Science in Mathematics of Computation — *Expected June 2024*

- Dean's Honors List (Fall 2020, Winter 2021, Spring 2021, Winter 2022, Winter 2023, Spring 2023)

University of California, Los Angeles — Los Angeles, California, USA
Minor in Film, Television, and Digital Media — *Expected June 2024*

Relevant Coursework

Mathematics : Linear Algebra, Real Analysis, Abstract Algebra (Group Theory, Ring Theory, Module Theory, Field Theory, Galois Theory), Ordinary Differential Equations, Differential Geometry, Numerical Analysis, Probability Theory, Partial Differential Equations (in progress), Optimization (in progress), Machine Learning (in progress)

CS : Introduction to Programming Languages, Computer Organization, Software Construction, Algorithms and Data Structures, Computer Graphics.

Research Experience

Department of Mathematics at UCLA — June 2023 - Present
UCLA Computational and Applied Mathematics REU
Mentors: Andrea Bertozzi, Sarah Burnett, Lingyun Ding

- Studied gravity-driven particle-laden viscous thin-films down an incline through experiments, computational simulations, data analysis, and theoretical exploration.
- Explored suspension model balance under post settling equilibrium time scale with numerical simulation and experimental validation.

Poster Presentations

Phase transitions in highly concentrated particle-liquid thin films — November 2023
76th Annual Meeting of the Division of Fluid Dynamics

- Experimentally investigated phenomenon in gravity-driven particle-laden flows down an incline where liquid-particle suspensions transition from fluid-like behavior to solid-like behavior.
- Discovered quantitative dependence of front speed and fluid layer thickness on parameters such as the inclination angle, particle size, particle volume fraction, densities, and viscosity.

Modeling polydisperse particle-laden flow down an incline — November 2023
76th Annual Meeting of the Division of Fluid Dynamics

- Modelled behavior of particle-laden flows with finitely many particle species of differing size as well as a continuous distribution of particle sizes.
- Developed model consisting of a system of hyperbolic conservation laws whose fluxes were determined by an auxiliary ordinary differential equation system (for the finite species case) or an integro-differential equation (for the continous size distribution case).
- Numerically simulated and performed comparisons between experimental and numerical data.

Projects

Department of Computer Science at UCLA October 2022 - December 2022
Computer Graphics Class Project

- With two other group members, built an interactive computer graphics demonstration, found here
- Implemented 3D graphics with lighting, shading, models, and physics.

Extracurricular Activities

Undergraduate Mathematics Student Association (UMSA) Fall 2021 - Present
Member

- Attended regular research seminars held by professors and guest speakers.
- Participated in social events, interacting and networking with peers and professors

Skills

Programming : Intermediate knowledge of C/C++, Python, JavaScript, Java, HTML, CSS, LaTeX; basic knowledge of MATLAB and shell scripting

Languages : English