Eunji Yoo

Applied Mathematics, University of California, Merced
eyoo3@ucmerced.edu
https://ejyoo921.github.io/
+1-415-823-1816

Education

Ph.D. Candidate in Applied Mathematics, University of California, Merced (UC Merced)

- August 2017 - Present (Expected graduation: August 2023)

- Advisors: François Blanchette and Shilpa Khatri

- Thesis topic: Simulations of settling marine aggregates in Stokes flow

M.S. in Applied Mathematics, San Diego State University (SDSU) [August 2017]

B.S. in Mathematics, Hankuk University of Foreign Studies (HUFS), South Korea [Feb 2013]

Technical Skills

Computational languages: Matlab, C++, Python, Linux-based system, LaTex, Mathematica
Libraries: AMReX framework, Fast Multipole Method
Languages: English, Korean

Publication

- E. Yoo, S. Khatri, and F. Blanchette, *Hydrodynamic forces on randomly formed marine aggregates. Phys. Rev. Fluids, 5:044305, Apr 2020,* DOI: https://doi.org/10.1103/PhysRevFluids.5.044305

- E. Yoo, *Nonlinear Waves in Density Stratified Fluids over Underwater Topography,* Master thesis, *Dept. of Mathematics, San Diego State University*

Awards & Fellowships

National Sciences Foundation Mathematical Sciences Graduate Internship [2021, 2022]
Southern California Edison Fellowship [2021]
UC Merced Applied Math Summer Research Fellowship [2018, 2019]
Valedictorian Award at HUFS [2013]
Asan Foundation Fellowship [2012]

Research Experiences

National Science Foundation (NSF) Mathematical Sciences Graduate Internship (MSGI) [2022]

- Hosted by Lawrence Berkeley National Laboratory (LBNL)
- Research mentor: Ishan Srivastava
- We studied a second-order rheological model for a complex fluid flow with pressure-dependent viscosity. We implemented the granular rheology within the AMReX framework using C++.

National Science Foundation (NSF) Mathematical Sciences Graduate Internship (MSGI) [2021]

- Hosted by National Renewable Energy Laboratory (NREL)
- Research mentor: Michael Martin
- We implemented a comprehensive solver package of the Equation of State (EoS) to obtain various properties for a wide temperature range of helium using Python. We use the library to model one-dimensional compressible flow with heat addition.

Presentations

UC Merced Graduate program recruitment talk at San Diego State University [Oct. 2022]

- University of California Merced Applied Mathematics Ph.D. program recruitment

The Computational Science (CS) division summer poster session [Sep. 2022]

- Continuum modeling of complex fluids with second-order rheology in AMReX

The Computational Science (CS) division summer poster session [Aug. 2022]

- Continuum modeling of complex fluids with a second-order rheology

Ocean Sciences Meeting 2022 [Feb. 2022]

- Simulations of settling marine aggregates in a stratified fluid

UC Merced, Energy and Environment seminar [Feb. 2021]

- Practice talk for OSM 2022

74th Annual Meeting of the Division of Fluid Dynamics, American Physical Society [Nov. 2021]

- Simulations of settling marine aggregates in a stratified fluid

UC Merced, Energy and Environment seminar [Oct. 2021]

- Settling marine aggregate in a stratified fluid

7th Annual Rocky Mountain Fluid Mechanics Research Symposium [Aug. 2021]

- One-dimensional flow of cryogenic Helium below 4K

UC Merced, Energy and Environment seminar [Apr. 2021]

- (Quick overview of) Fast multipole method for Stokes equations

UC Merced, Energy and Environment seminar [Dec. 2020]

- Simulations of settling marine aggregates

72nd Annual Meeting of the Division of Fluid Dynamics, American Physical Society [Nov. 2019]

- Settling of randomly formed marine aggregates

UC Merced, Energy and Environment seminar [Mar. 2019]
- Simulations of flow around marine aggregates

The Yosemite Fluid Meeting (FluMe) [Aug. 2018]
- Flow around marine aggregates with boundary integral equations

Teaching and Mentoring Experiences

Teaching Assistant at UC Merced [Fall 2017 - Present]
- Calculus, Linear Algebra, Ordinary/Partial Differential Equations, and Numerical Methods.

Peer mentoring for first-year graduate students [Fall 2022 - Present]
- Meet with new graduate students regularly to guide them to adjust to the Ph.D. program
- Attend a discussion with other mentors and mentees each month

Mentor for Applied Math Challenge hosted by UC Merced SIAM Student chapter [Spring 2022]
- Mentored a group of four undergraduate students to solve a challenging problem using numerical methods.

Graduate Assistant for Research Experiences for Undergraduates at SDSU [Summer 2017]
- Research topic: Study of Vortex Dynamics with Free Surface in a Shallow Water Regime

Teaching Assistant at SDSU [Fall 2015 - Spring 2017]
- Calculus 2 and Vector calculus

Activities
- University of California, Merced SIAM student chapter, social media coordinator [2022-2023]
- Member of the American Physical Society (APS), Society for Industrial and Applied Mathematics (SIAM), and American Geophysical Union (AGU)

References
- François Blanchette
  Professor, University of California, Merced, fblanchette@ucmerced.edu
- Shilpa Khatri
  Associate Professor, University of California, Merced, skhatri3@ucmerced.edu
- Micheal Martin
  Researcher, National Renewable Energy Laboratory, Michael.Martin@nrel.gov
- Ishan Srivastava
  Lawrence Berkeley National Laboratory, isriva@lbl.gov