Eunji Yoo

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Education

- **Ph.D. in Applied Mathematics**, University of California, Merced(UC Merced) [2017-2023]
  - Advisors: Dr. François Blanchette and Dr. Shilpa Khatri
  - Thesis title: Flows of settling marine aggregates and complex fluid rheology.
- **M.S. in Applied Mathematics**, San Diego State University (SDSU) [2014-2017]
- **B.S. in Mathematics**, Hankuk University of Foreign Studies, South Korea [2009-2013]

Research Experiences

- National Science Foundation Mathematical Sciences Graduate Internship [2022]
  - Hosted by Lawrence Berkeley National Laboratory (LBNL)
  - Mentor: Dr. 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++. The work was continued to be part of my Ph.D. thesis.
- National Science Foundation Mathematical Sciences Graduate Internship [2021]
  - Hosted by National Renewable Energy Laboratory (NREL)
  - Mentor: Dr. 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.

Technical Skills

Computational skills: 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

Graduate Dean's Dissertation Fellowship (UC Merced) [2023]
National Sciences Foundation Mathematical Sciences Graduate Internship [2021, 2022]
Southern California Edison Fellowship [2021]
Applied Math Summer Research Fellowship (UC Merced) [2018, 2019]
Valedictorian Award at Hankuk University of Foreign Studies [2013]
Asan Foundation Fellowship [2012]

Presentations

- The American Physical Society's (APS) March Meeting 2023 [Mar. 2023]
  - Simulations of settling marine aggregates in a stratified fluid
- 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 (OSM) 2022 [Feb. 2022]
  - Simulations of settling marine aggregates in a stratified fluid
- APS 74th Annual Meeting of the Division of Fluid Dynamics [Nov. 2021]
  - Simulations of settling marine aggregates in a stratified fluid
- UC Merced, Energy and Environment seminar [Every semester 2019-2023]
  - Simulations of flow around marine aggregates
  - Settling marine aggregate in a stratified fluid
  - Quick overview of) Fast multipole method for Stokes equations

- 7th Annual Rocky Mountain Fluid Mechanics Research Symposium [Aug. 2021]
  - One-dimensional flow of cryogenic Helium below 4K
- APS 72nd Annual Meeting of the Division of Fluid Dynamics [Nov. 2019]
  - Settling of randomly formed 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 [2017-2023]
  - Calculus 2, Vector Calculus, Linear Algebra, Ordinary/Partial Differential Equations, and Numerical Methods.
- Mentor for Applied Math Challenge hosted by UC Merced SIAM Student chapter [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 [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

Extra Activities

- University of California, Merced SIAM student chapter, social media coordinator [2022-2023]

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 IV-HPC, National Renewable Energy Laboratory, Michael.Martin@nrel.gov
- Ishan Srivastava
  Research Scientist, Lawrence Berkeley National Laboratory, isriva@lbl.gov