

Ryan Schanta

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EDUCATION

University of Delaware , College of Engineering, Newark, DE	Jul. 2025
<i>Master of Civil Engineering: Coastal Engineering Focus</i>	GPA: 4.0
<i>Thesis: "Prediction of Nonlinear Wave Statistics Using Machine Learning Models Trained on Wave-Resolving Nearshore Hydrodynamics Models"</i>	
Cornell University , College of Engineering, Ithaca, NY	May 2023
<i>Bachelor of Science: Civil Engineering</i>	GPA: 4.1
<i>Minor: Environmental Engineering</i>	

RESEARCH EXPERIENCE

Coastal and Hydraulics Lab , United States Army Corps of Engineers	Jan. 2025 – Sep. 2025
<ul style="list-style-type: none">• ORISE scholar as part of the Coastal Inlets Research Program (CIRP) focusing on sensitivity analyses of the FUNWAVE-TVD model	
Center for Applied Coastal Research , University of Delaware	Aug. 2023 – Aug. 2025
<ul style="list-style-type: none">• Created efficient HPC-based workflows to run large ensembles of FUNWAVE-TVD models to use as a corpus of training data for machine learning surrogate models, conduct sensitivity analyses, and facilitate parameter tuning under the guidance of Dr. Tian-Jian Hsu, Dr. James Kirby, and Dr. Fengyan Shi• Applied machine learning models to nearshore hydrodynamics problems to model spatially-varying statistics, predict time series, and perform classification tasks, using algorithms and techniques such as kernel-based methods, random forests, XGBoost, Convolutional Neural Networks (CNNs), Physics-Informed Neural Networks (PINNs), and autoencoders	
Soil and Water Lab , Cornell University	Jan. 2023-Jun. 2023
<ul style="list-style-type: none">• Developed MATLAB-based tools for small watershed hydrology analysis of land in Upstate New York	
DeFrees Hydraulics Lab , Cornell University	Jun. 2022 – Dec. 2023
<ul style="list-style-type: none">• Assisted research on the modeling of internal waves and mixing in internal swash zones in Cayuga Lake under the guidance of Dr. Todd Cowen and Dr. Pete Diamessis	
Nair Research Group , Cornell University	Jan. 2021 – May 2023
<ul style="list-style-type: none">• Undergraduate research assistant sponsored by the Hunter R. Rawlings III Cornell Presidential Research Scholars (RCPRS) program• Aided in the development of a magnetorheological cement slurry for geothermal environments	
Advanced Technologies for Large Structural Systems (ATLSS) , Lehigh University	Summer 2021
<ul style="list-style-type: none">• REU student in the University Transportation Center Underground Transportation Infrastructure (UTC-UTI) program funded by the NSF	

- Researched the effects of phase change material incorporation into concrete aggregate via impregnation and absorption for use in underground pile and tunnel structures
- Produced a technical report and poster concerning research findings

WORK EXPERIENCE

Arup New York City, NY	Summer 2023
<ul style="list-style-type: none"> • Intern in the Civil-Water team in New York City, NY • Produced Civil3D-based deliverables for stormwater and sanitary sewer utilities in urban areas • Assisted work in stormwater management for transportation hubs • Utilized traffic/transportation engineering design guidelines to produce reports and deliverables for municipal and state DOTs • Supported new projects in coastal engineering and hydrodynamic modeling 	
Bergmann Architects, Engineers & Planners , Rochester, NY	Summer 2022
<ul style="list-style-type: none"> • Intern in the Waterway Structures division in Rochester, NY • Assisted work on canal, dam, and embankment projects throughout Upstate New York in cooperation with the New York State Canal Corporation • Applied structural, geotechnical, and hydraulic engineering principles to evaluate structural stability and design structural elements • Utilized AutoCAD, Mathcad, CostWorks, and Microsoft Excel for reports 	

LEADERSHIP EXPERIENCE

Engineers for a Sustainable World , Cornell University	Fall 2019 - Spring 2022
<ul style="list-style-type: none"> • Worked in the Renewable Energy Design team to design products for external partners • Served as the director of public outreach for the 2020-2021 academic year, facilitating partnerships with local organizations and sponsors • Served as the vice president for the 2021-2022 academic year, overseeing day-to-day operations of the team and managing the organization's online presence 	

TEACHING EXPERIENCE

CIEG 305: Fluid Mechanics	Fall 2023/2024 (Delaware)
<ul style="list-style-type: none"> • Served as a teaching assistant under Dr. Carolyn Voter • Ran weekly student hours sessions for homework and course content help 	
CEE 3200: Engineering Computation	Spring 2022/ 2023 (Cornell)
<ul style="list-style-type: none"> • Served as a teaching assistant under Dr. Pete Diamessis • Ran weekly recitation sections reviewing course content • Ran weekly office hours to assist students with implementing course content in MATLAB • Assisted graders in grading the final, comprehensive coding assignment 	
ENGRG 1091: AEW Collaborative Workshop: MATH 1910	Fall 2021 (Cornell)
<ul style="list-style-type: none"> • Served as a co-instructor as part of the Academic Excellence Workshop (AEW) program for MATH 1910: Calculus for Engineers 	

- Developed weekly lectures, problem sets, solutions, and study guides for first-semester students
- Facilitated student interaction and cooperative learning in weekly 2-hour sessions

ENGRG 1093: AEW Collaborative Workshop: MATH 2930

Spring 2021 (Cornell)

- Served as a co-instructor as part of the Academic Excellence Workshop (AEW) program for MATH 2930: Differential Equations for Engineers
- Developed weekly online synchronous lectures and activities, problem sets, and solutions
- Facilitated student interaction and cooperative learning in weekly 2-hour sessions

Engineering Learning Initiatives

Fall 2020 (Cornell)

- On-campus tutor for PHYS 1112: Mechanics and Heat and MATH 1910: Calculus for Engineers

Lavner Camps and Programs

Summer 2020

- Technology instructor for game design and science summer camps
- Taught coding to elementary school students in Scratch and Lua for use in Roblox game engines

AWARDS AND HONORS

Merrill Presidential Scholar

Spring 2023

- Awarded to Cornell seniors graduating in the top 1% of their class across all the university's colleges

Fuertes Medal

Spring 2023

- Awarded to the Cornell Civil and Environmental Engineering undergraduate student with the most distinguished academic record upon graduation

Tau Beta Pi Honor Society

Fall 2021 - Present

- Awarded to engineering juniors in the top 1/8 of their class

Hunter R. Rawlings III Cornell Presidential Research Scholars

Summer 2021- Spring 2023

(RCPRS) Program

- Awarded based on recommendation from faculty mentor (Dr. Sriramya Nair) and merit of research proposal
Research proposal: "*Characterization of Alternative Cementitious Materials for Geothermal Applications*"

Engineering Learning Initiatives Undergraduate Research Award

Spring 2021

- Funding award for the proposal "*Characterization of cement-based magnetorheological fluids with suspended iron particles*"

POSTER PRESENTATIONS/CONFERENCE TALKS

Ryan Schanta, Fengyan Shi, Tian-Jian Hsu, Jiaye Zhang, Jack Anthony Puleo. "Prediction of Nonlinear Wave Statistics in the Nearshore by Machine Learning Models". American Geophysical Union (AGU) 2024 Meeting, Nearshore Processes Oral Session

Ryan Schanta, Fengyan Shi, Tian-Jian Hsu. "Prediction of Nearshore Nonlinear Wave Properties Using Machine Learning Models Trained on Wave-Resolving Hydrodynamics Models." Community Surface

Dynamics Modeling System, 2024 Meeting.

Ryan Schanta, Lyn Zemberekçi, Sriya Vuppalapati, Sriramy D. Nair. "Rheological Characterization of Cement Slurries with High Magnetic Particle Concentrations under Low Magnetic Field Strengths."

American Concrete Institute 2022 Fall Convention, 123 Poster Session

Earned 3rd place in poster competition

Ryan Schanta, Sriramy D. Nair. "Characterization of cement-based magnetorheological fluids with suspended iron particles." ASEE 2021 St. Lawrence Section Conference

Ryan Schanta, Muhannad Suleiman, Clay Naito. "Incorporation of Phase Change Materials in Concrete for Geothermal Energy Structures." Summer 2021 Undergraduate Research Poster Session: Underground Infrastructure REU

TECHNICAL SKILLS

Programming Language Proficiency

- **MATLAB:** extensive use in numerical methods, fluid mechanics, and solid mechanics courses for numerical computing, image processing, and data analysis
- **Python:** extensive use for data processing and numerical methods using packages such as NumPy and Pandas. Working proficiency with ML packages using PyTorch and Keras.
- **R:** intermediate proficiency with using statistical packages for hydrologic data analysis
- **FORTRAN:** intermediate proficiency to write, run, and troubleshoot parallelized (MPI) CFD code in HPC environments, primarily in the context of coastal models

Programming Skills

- **Machine Learning:** graduate level coursework in engineering-focused ML applications, with a focus on CNNs, PINNs, and highly dimensional data, implemented primarily in Keras/TensorFlow environments
- **High Performance Computing:** proficient in using command line interface tools to schedule, submit, and manage jobs across multiple nodes/processors for highly parallelized code
- **Source Control:** proficient with Git/GitHub
- **Data Engineering:** basic proficiency in building tools to store metocean data in efficient formats to deploy at scale for modeling and ML applications

Foreign Language Proficiency

- **Spanish:** intermediate
- **French:** intermediate

Computer-Aided Design (CAD)

- **Autodesk Inventor:** intermediate proficiency
- **Autodesk AutoCAD & Civil3D:** intermediate proficiency

Geographic Information Systems (GIS)

- **ArcGIS Pro:** intermediate proficiency for workflows in urban planning and civil engineering
- **GeoPandas:** intermediate proficiency to integrate geospatial data in Python workflows