RITVIK TEEGAVARAPU

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Profile

Beginning long-term research on using forward solutions to inverse problems to construct measure transport maps, and more broadly inverse problems and uncertainty quantification. Motivated in teaching, serving as a tutor and teaching assistant as well as designing classes to teach fellow undergraduates.

Education

California Institute of Technology Sep. 2022 – June 2026
B.S. in Applied and Computational Math, Minor in Pure Mathematics *Pasadena, California*

- GPA: 4.20/4.00
- Relevant Classes: Applied Linear Algebra, Probability Models, Real Analysis

Publications

Classification of Artificial & Real Objects Using Faster R-CNNs Dec. 2021
2021 IEEE Symposium Series on Computational Intelligence

- **Ritvik Teegavarapu**, Dr. Debojit Biswas

Conferences & Talks

Summer Undergraduate Research Fellowship (SURF) Seminar Day 2023 Oct. 2023
Oral Presenter *Pasadena, California*

- Presented "*Incorporating Stochastic Loading into Droplet-Based Digital PCR Model*"
- Competed in 2023 Perpall Speaking Competition

2021 IEEE Symposium Series on Computational Intelligence Dec. 2021
Oral Presenter *Orlando, Florida*

- Presented "*Classification of Artificial & Real Objects Using Faster R-CNNs*"

Research

Using Forward Solutions of Inverse Problems for Measure Transport Maps Sep. 2023 – Present
with Dr. Ricardo Baptista *Stuart Lab, Caltech*

Incorporating Stochastic Loading into Droplet-Based Digital PCR Model Jun. 2023 – Sep. 2023
with Matt Cooper & Prof. Rustem Ismagilov *Ismagilov Lab, Caltech*

- Sought to improve efficacy of lab measurements using droplet-based digital PCR
- Created forward model of droplet-based digital PCR reaction using Poisson statistics
- Performed comparative analysis on forward model with and without loading noise

Classification of Artificial & Real Objects Using Faster R-CNNs Oct. 2019 – Dec. 2021
with Dr. Debojit Biswas *FAU Research Park, FAU*

- Implemented two CNN architectures; one with SSD detector back-end and R-CNN
- Performed comparative analysis between architectures in their efficiency and accuracy
- Published paper in 2021 IEEE SSCI conference in proceedings, and presented as oral speaker

Teaching

Teaching Assistant Spring 2024
ACM 11: Introduction to Computational Science and Engineering *On-site, part-time*
- Rewriting problem sets to further conceptual understanding of applied math topics
- Developing recitation notes and lecture notes to assist learning

Teaching Assistant Fall 2023
Ma 1a: Calculus of One Variable *On-site, part-time*
- Hosted weekly office hours and exam review sessions to facilitate understanding of content
- Wrote in-depth notes for students to reference, as well as weekly grading of assignments

Rise Tutor Sep. 2022 – Present
Caltech Y *On-site/Remote, part-time*
- Tutored 10+ high school students for over 100+ hours in the disciplines of mathematics, physics, and chemistry for 4 out of 5 weekdays
- Developed resources (worksheets, presentations, examples) for students to learn concepts

Employment

Mentor/Consultant June 2022 – Present
My Mentor Global *Remote, part-time*
- Helped international students review college essays, provided advice about studying in the United States, how to do well in high school
- Created presentations to reinforce important concepts about the college application process, and general mentoring

Test Writer May 2022 – May 2024
Florida Association of Mu Alpha Theta *Remote, part-time*
- Wrote 300+ original math questions (statistics, calculus, algebra) for state and regional math competitions administered throughout year

Leadership & Service

Caltech Undergraduate Admissions Office Apr. 2023 – Present
Admissions Ambassador
- Lead campus tours for interested students and parents
- Interact with students to help answer questions through webinars and Q+A's

Academics and Research Committee (ARC) Oct. 2022 – Present
Freshman Rep. (2022-2023), At-Large Rep. (2023-)
- Serve on the committee of students to strengthen student-faculty relations
- Listen to students about course concerns, and actively work to improve classes

Caltech Math Meet (CMM) Sep. 2022 – Present
Problem Writer (2022-2023), Vice President (2023-)
- Organized a math competition for over 250+ high school students nationally
- Wrote 50+ problems for the inaugural integration bee, individual round, and others

Awards

John Stauffer SURF Fellow Jun. 2023

CMS Teaching Assistant Fellow Sep. 2023

Skills

Languages: English, Telegu
Computer Languages: LaTeX, Python, MATLAB, R, Java
Developer Tools: Jupyter Notebooks, VS Code

References

Ricardo Baptista
von Karman Instructor in Computing and Mathematical Sciences

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California Institute of Technology