

Ishan Saran

STUDENT RESEARCHER

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Education

Emory University

BACHELOR OF SCIENCE IN PHYSICS, SUMMA CUM LAUDE

- Major GPA: **3.87/4.00**; Overall GPA: **3.74/4.00**

Atlanta, GA

May 2020

Ed. W Clark High School

ADVANCED HONORS DIPLOMA

- GPA: 3.78/4.00

Las Vegas, NV

May 2017

Skills

Languages Python, Java, Processing; Hindi, Chinese (conversational)

Interests Data analysis, visualization, machine learning, statistics, mathematical modeling

Experiences

Emory Departments of Physics and Biology

STUDENT HONORS RESEARCH

Atlanta, GA

September 2018 - May 2020

- Built computational models (RNNs, CNNs, etc.) to model and predict fly dynamics and build behavioral representations in Python.
- Compared different statistical techniques (t-SNE, UMAP, etc.) for dimensionality reduction of big data in Python.
- Completed and defended honor's thesis titled *Representing Fly Behavior with Recurrent Neural Networks* with highest honors

Yale School of Medicine, Program of Applied Translational Research

STUDENT RESEARCHER

New Haven, CT

May 2019 - August 2019

- Developed and tested different machine learning models to predict outcomes of patients with acute kidney injury, end-stage renal disease in pediatric patients, readmission probability within 30 days of heart failure patients in Python.
- Worked alongside biostatistician to create and verify data sets for future analysis; including elements of data cleaning and feature engineering.

Emory Department of Physics

PHYSICS MENTOR, TA

Atlanta, GA

September 2018 - May 2020

- Taught introductory physics (3 semesters); covered topics on kinematics and motion, classical and fluid mechanics, thermodynamics, electricity and magnetism, and optical and wave phenomena
- Taught advanced electricity and magnetism (1 semester); covered topics including using Fourier series to construct voltage functions, deriving optical phenomena from Maxwell's equations, Fresnel equations, radiation pressure, etc.

Projects

Interdisciplinary Contest in Modeling

- Built a computational model to quantify the economic value of ecosystem services for land development projects
- Won the outstanding winner award at the COMAP Interdisciplinary Contest in Modeling competition - the highest honor awarded to 19 teams out of 11,262 worldwide
- Published in the Journal of Undergraduate Mathematics and its Applications, titled *A Monetary Evaluation of Ecosystem Services*

Language of Science Corpus

- Built a corpus from journals from the American Journal of Sociology and American Sociology Review for further natural language processing via the optical character recognition package PyTesseract

COVID-19 Modeling Competition

- Built a cellular automaton-based stochastic epidemiological package to model infectious disease spread in Python.