Ishan Saran

RESEARCH TECHNICIAN

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Experiences

Yale School of Medicine, Clinical and Translational Research Accelerator

New Haven, CT

POSTGRADUATE RESEARCH ASSOCIATE, ADVISOR: **DR. F PERRY WILSON**

Jun 2020 - Dec 2022

- Designed and tested the model architecture for various prognostic models with biostatisticians, physicians, and machine learning experts to optimize statistical metrics; e.g. AUC-ROC scores. Key areas: **feature engineering, dimensionality reduction, model development**
- Created a computational tool to enhance the standardized coding of acute kidney injury; packages in Python and R; standalone app, website, and documentation at aki f l agger . r eadt hedocs . i o. Key areas: **full-stack development, R Shiny, nephrology**
- Assembled and reviewed articles to generate a systematic review of physician versus computer model prediction performance and abnormal etiologies of secondary hypertension, acute kidney injury electronic alerts. Key areas: **paediatrics, secondary hypertension, exploratory data analysis**

Emory University, Departments of Physics and Biology

Atlanta, GA

HONORS RESEARCH, ADVISOR: **DR. GORDON BERMAN**

Sep 2018 - May 2020

- Built computational models (RNNs, CNNs, etc.) to model and predict fly dynamics and build behavioral representations in Python. Key areas: **neural networks, postural decomposition, theoretical biophysics**
- Compared dif erent statistical techniques (t-SNE, UMAP, etc.) to reduce the dimensionality of big data in Python. Key areas: **dimensionality reduction, hyperparameter optimization, model selection**
- Honor's Thesis: Completed and defended undergraduate thesis Representing Fly Behavior with Recurrent Neural Networks to obtain highest honors in Physics. Key areas: **Drosophila research, computational ethology, machine learning**

Princeton Center for the Physics of Biological Function

Princeton, NJ

SUMMER STUDENT, **DR. BILL BIALEK AND DR. JOSHUA SHAEVITZ**

Jun 2019 & Jun 2020 - Aug 2020

- Selected amongst a group of 30 to participate in a biophysics summer symposium on state-of-the-art physical modeling techniques. Key areas: **bird-song and bacterial motion patterns, Drosophila embryology, behavioral representations**
- Carried out lab research to determine motility patterns in bacterial populations; applied tracking algorithms in Python for bacterial and bird populations. Key areas: **E. coli research, fluid dynamics, flock dynamics**

Yale School of Medicine, Program of Applied Translational Research

New Haven, CT

STUDENT RESEARCHER, ADVISOR: **DR. F PERRY WILSON**

May 2019 - August 2019

- Developed and tested dif erent machine learning models to predict outcomes and develop risk scores for patients with acute kidney injury, end-stage renal disease in pediatric patients, recovery rates for heart failure patients in Python. Key areas: **cardiology, nephrology, paediatrics**
- Worked alongside biostatistician to create and clean focal segmental glomerulosclerosis data sets for future analysis. Key areas: **data cleaning, feature engineering, model selection**

Emory Department of Physics

Atlanta, GA

PHYSICS MENTOR, TA; ADVISOR: **DR. TOM BING**

September 2018 - May 2020

- Taught introductory physics (3 semesters) covering topics on kinematics and motion, classical and fluid mechanics, thermodynamics, electricity and magnetism, and optical and wave phenomena. Key areas: **classical mechanics, electrodynamics, thermodynamics**
- Taught upper-level electricity and magnetism (1 semester) covering topics including Fourier series for voltage functions, deriving elementary phenomena from Maxwell's equations, Fresnel equations, radiation pressure, etc. Key areas: **optics, statistical mechanics, electrodynamics**