

Ishan Saran

POSTGRADUATE ASSOCIATE, YALE SCHOOL OF MEDICINE

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Experiences

Yale School of Medicine, Clinical and Translational Research Accelerator

New Haven, CT

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

June 2020 - current

- 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 `akiflagger.readthedocs.io`. *Key areas: **full-stack development, R Shiny, nephrology***
- Assemble 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 Departments of Physics and Biology

Atlanta, GA

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

September 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 different 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

June 2019 & June 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, statistical mechanics, machine learning***
- 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***
- Watched Nobel Prize laureates give lectures on research. *Key areas: **Drosophila embryology, animal tracking, behavioral representations***

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 different 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

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. *Key areas: **classical mechanics, electrodynamics, thermodynamics***
- 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. *Key areas: **optics, statistical mechanics, electrodynamics***

Education

Emory University

Atlanta, GA

BACHELOR OF SCIENCE IN PHYSICS, SUMMA CUM LAUDE

May 2020

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

Ed. W Clark High School

Las Vegas, NV

ADVANCED HONORS DIPLOMA

May 2017

- GPA: **3.78/4.00**

Skills

Languages Python, R, HTML, CSS & JavaScript; Hindi, Chinese 中文 (conversational)

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

Publications

[1] James T Nugent, Chelsea Young, Melissa C Funaro, Kuan Jiang, **Ishan Saran**, Lama Ghazi, F Perry Wilson, and Jason H Greenberg. Prevalence of secondary hypertension in otherwise healthy youth with a new diagnosis of hypertension: A meta-analysis. The Journal of Pediatrics, **2022**.

[2] Aditya Biswas, **Ishan Saran**, and F Perry Wilson. Introduction to supervised machine learning. Kidney360, 2(5):878–880, **2021**.

[3] Ibrahim Sandokji, Yu Yamamoto, Aditya Biswas, Tanim Arora, Ugochukwu Ugwuowo, Michael Simonov, **Ishan Saran**, Melissa Martin, Jeffrey M Testani, Sherry Mansour, et al. A time-updated, parsimonious model to predict aki in hospitalized children. Journal of the American Society of Nephrology, 31(6):1348–1357, **2020**.

[4] Ugochukwu Ugwuowo, Yu Yamamoto, Tanim Arora, **Ishan Saran**, Caitlin Partridge, Aditya Biswas, Melissa Martin, Dennis G Moledina, Jason H Greenberg, Michael Simonov, et al. Real-time prediction of acute kidney injury in hospitalized adults: implementation and proof of concept. American Journal of Kidney Diseases, 76(6):806–814, **2020**.

[5] Ramos E, Rexer E, **Saran I**. A Monetary Evaluation of Ecosystem Services. UMAP Journal. **2019** Jun 1;40.

Awards, Memberships, and Honors

2021-2022 Captain of Yale Chess Club

2020-2021 2021 OpenCV Spatial AI Competition Finalist

2020-2022 American Society of Nephrology, American Physical Society member

2021 Kidney STARS Award Recipient; attendend and presented at ASN Kidney Week 2021

2020 Attended and presented at neuromatch3.0, Computational Neuroscience conference

2017-2020 President, Vice President, Captain of Emory Chess Club

2019 Kidney STARS Award Recipient; attendend and presented at ASN Kidney Week 2019

2017 HOSA Biomedical Debate State Champion

2016-2017 Gold Medalist in Anatomy & Physiology in the Nevada Science Olympiad

2016-2017 Top 10 International Public Forum Debate Champion

2015-2016 US Chess Denker Tournament of High School Champions, Top Upset Prize

2012-2017 5-time Nevada State Chess Champion