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 `akiflagger.readthedocs.io`. *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 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, **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 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; 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***

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; **C**hinese 中文, **H**indi, **E**nglish, **S**panish, **S**anskrit (conversational)

Interests Data analysis & visualization, machine learning & statistics, mathematics & physics modeling

Hobbies Chess, Dance, Skateboarding

Publications

[1] Nugent, James T., Kuan Jiang, Melissa C. Funaro, **Ishan Saran**, Chelsea Young, Lama Ghazi, Christine Y. Bakhoum, F. Perry Wilson, and Jason H. Greenberg. "Does This Child With High Blood Pressure Have Secondary Hypertension?: The Rational Clinical Examination Systematic Review." JAMA 329, no. 12 (**2023**): 1012-1021.

[2] 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**.

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

[4] Ibrahim Sandokji, Yu Yamamoto, Aditya Biswas, Tanima 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**.

[5] Ugochukwu Ugwuowo, Yu Yamamoto, Tanima Arora, **Ishan Saran**, Caitlin Partridge, Aditya Biswas, Melissa Mar- tin, 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**.

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

Honors, Awards and Memberships

2020-2023	American Society of Nephrology (ASN) and American Physical Society member & scholarship recipient
2021-2022	Captain of Yale Chess Club
2019 & 2021	Kidney STARS Award Recepient; attendend and presented at ASN Kidney Week
2020	Attended and presented at neuromatch3.0, Computational Neuroscience conference
2017-2020	President, Vice President, Captain of Emory Chess Club
2019-2020	Co-captain and Co-founder of Emory Agnition
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