ZIYUAN SHEN

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LinkedIn Profile: https://www.linkedin.com/in/ziyuan-shen/
Technical Portfolio: https://ziyuan-shen.github.io/

EDUCATION

Duke University *August 2018 - May 2020*
Master of Science, Electrical and Computer Engineering
Overall GPA: 3.97/4.00
Data&ML coursework: Statistical Programming (R); Deep Learning; Machine Learning; Vector Space Methods, etc;
EE coursework: Software Design; CMOS VLSI Design; Computer Systems and Engineering;

Southeast University *September 2014 - June 2018*
Bachelor of Engineering, Information Science and Engineering
Overall GPA: 3.72/4.00
Programming coursework: Fundamentals of Computer Science (C++ Programming); Data Structures;
EE coursework: Computer Arch.&Logic Design; Digital Circuits; Analog Circuits; Signal Processing; Automatic Control, etc

TECHNICAL STRENGTHS

Computer Languages	Python, Java, C++, SQL, R, Shell Scripting, AWK, Markdown, HTML/CSS
Database&Visualization	PostgreSQL, SQlite, MySQL, MongoDB, Pandas, Matplotlib, Seaborn, ggplot
Other Tools	AWS, Scikit-Learn, TensorFlow, Keras, PyTorch, NumPy, Git, Vim, Make

EXPERIENCE

Duke Institute for Health Innovation May 2019 - May 2020
Data Scientist Intern *Durham, NC, United States*

· Development Language: Python, SQL, Shell Scripting (Github)
· Predict patients' deterioration (ICU admission, mortality, etc) in real time and ultimately standardize response protocols.
· Manipulate large-scale (1 TB data & over 200k encounters) hospital data (cleaning, visualization, quality assurance, etc).
· Build model achieving average precision 7 times better than the baseline model, which is currently in use in Duke Hospital.

National Mobile Communications Research Laboratory March 2015 - June 2018
Research Assistant *Nanjing, Jiangsu, China*

· Achievements: 7 publications (4 **first-author** publications) and 3 patents. (Development tool: Mathematica)
· Conduct DNA programming research for computing Deep Neural Network, Markov chains and digital logic.

PROJECTS & PUBLICATIONS

Recent Research & Projects Machine Learning, Data Analytics, App Design

Medical Outcomes Prediction:
· Predict time-series medication administration (Github) and hospital readmission (Github) using MIMICIII Dataset.
· Classify breast cancer subtypes using Breast Cancer Wisconsin Dataset and achieve AUC of up to 0.993 (Github).
· Utilized: Python, PostgreSQL, SQlite, Keras, LSTM, Scikit-Learn, PCA, T-SNE, Matplotlib

Image Analysis and Classification:
· Open Source Contribution: add SPIE-AAPM-NCI breast cancer whole slide image dataset to TensorFlow datasets (Github).
· Implement Squeeze and Excitation network to classify Oxford Pet and Cifar10 datasets (Github).
· Utilized: Python, TensorFlow, CNN

Web Scraping & App Design:
· Design web applications that serves as Central News Hub (Github) and NBA Statistic Hub (Github).
· Utilized: R, HTML/CSS, JavaScript, R Shiny, ggplot, GNU Make

Recent Publications Machine Learning, Molecular Programming

· S. Skove, H. Shi, **Z. Shen**, M. Gao, M. Cui, and M. Nichols, S. Balu, A. Bedoya, "Development of Machine Learning Model to Predict Risk of Inpatient Deterioration," in *2020 Machine Learning for Healthcare (MLHC)*, Apr 2020.
· C. Zhang, **Z. Shen**, W. Wei, J. Zhao, Z. Zhang, and X. You, "Molecular computing for markov chains," *Natural Computing*, Apr 2019. (**Equal contribution with first author**) https://doi.org/10.1007/s11047-019-09736-8
· **Z. Shen**, L. Ge, W. Wei, J. Zhao, Z. Zhang, X. You, and C. Zhang, "Molecular synthesis for probability theory and stochastic process," *Journal of Signal Processing Systems*, vol. 90, no. 10, pp. 1479-1494, Oct 2018. https://doi.org/10.1007/s11265-017-1318-7