Jiaxing Qiu

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Education

Ph.D. in Data Science, School of Data Science, University of Virginia *09/2023 -*
MS in Data Science, School of Data Science, University of Virginia 3.8/4 *06/2019 - 12/2020*
BS in Information and Computing Science, School of Mathematical Sciences, Soochow University 3.8/4 *09/2015 - 06/2019*

- Outstanding Scholarship of Academic Excellence of Soochow University, 2016-2018
- Excellent Graduates (top 100) and Honor Degree of Jingwen College, Soochow University
- University of Cambridge, Lucy Cavendish College summer program graduates, 08/2016

- Programming Language - Python, R, MATLAB, SQL, C, Java, HTML5, CSS3, JavaScript.
- Data Science - Deep Learning and Neural Network; Machine Learning; Statistical Analysis; Time Series.
- Computer Science - Data Structure and Algorithm Design; Database; Software Engineering; Object-Oriented Programming.
- Mathematics - Linear Algebra; Advanced Mathematical Analysis(Calculus); Discrete Mathematics.

Software

[1] Data format conversion software (Matlab). *https://github.com/JiaxingQiu/TagsToTable*
[2] Sequential data engineering package (Python). *https://test.pypi.org/project/mvtsbuilder/*
"Dictionary-oriented" strategy to engineer multivariate time series data, such as clinical bedside monitoring data, into unified formats of DataFrame or TensorFlow Dataset, with automated documentation following FAIRness principle.
[3] Interactive Medical Data Science Toolbox software (R). *https://joy-cama-uva.shinyapps.io/MediDSToolbox_demo/*
Interactive tools generalizable to varying biomedical data science research topics, with interactive visualization with respect to both individual and longitudinal data, uni-/multi-variable regression modeling strategy allowing for robust clustering on repeated measures, unsupervised clustering and anomaly detection.

Publications

[1] Analyzing the Composition of Diabetes Patients and Impact of Seasonal and Climate Trends on Emergency Room Utilization in Central Virginia. ***IEEE, DOI:*** *https://doi.org/10.1109/SIEDS49339.2020.9106652*
[2] Cardiorespiratory signature of neonatal sepsis: Development and validation of prediction models in 3 NICUs. ***Pediatric Research, DOI****: https://doi.org/10.1101/2022.09.28.22280469*
[3] Cardiorespiratory Physiological Trajectories in Extremely Preterm Infants. ***Pediatric Research***
[4] Cardiorespiratory Monitoring Data to Predict Respiratory Outcomes in Extremely Preterm Infants. ***AJRCCM, DOI:*** *https://doi.org/10.1164/rccm.202210-1971OC*
[5] Pathophysiological responses to bloodstream infection in critically ill transplant recipients: a retrospective multi-cohort analysis. ***Clinical Infectious Diseases [review]***
[6] Heart Rate Patterns Predicting Cerebral Palsy in Preterm Infants. ***Pediatric Research***
[7] The Impact of Chorioamnionitis and Early Onset Sepsis on Heart Rate and SpO2 in VLBW Infants. ***PAS abstract***

Work & Research

[Research Consultant] Nihon Kohden Digital Health Solutions [part-time] *03/2023 - current*
Development and external validation of models implemented on physiological monitoring devices, to fulfill industrial and FDA requirements.

[Data Scientist] Center for Advanced Medical Analytics, School of Medicine, UVA [full-time] *02/2021 - current*
AI and statistical analytics methodologies to public health and biomedical research. *https://github.com/UVA-CAMA*

- **NIH (U01)** 'Pre-Vent' study -- Analyze prematurity-related ventilatory control in respiratory outcomes, coordinate 5 external university sites, UVA is the Leadership and Data Coordinating Center (LDCC).
- Clinical projects such as Bloodstream Infection (BSI) in ICU – Early detection and screening.
  - Regression inference on demographic and physiological characteristics of BSI in ICU patients.
  - Bayesian modeling derived transplant-specific criteria of Systemic Inflammatory Response Syndrome(SIRS).
  - Neural network modeling on sequential multivariable vital signs and lab results data.

[Graduate Research Assistant] Department of Computer Science, UVA *10/2020 - 02/2021*
Deep learning in biomedical research with the Department of Infectious Diseases, UVA Health System.

[Independent Project] 'EDetectives' -- Automated detection of eating disorders(ED) on social media *06/2020 - current*
Build machine learning models to detect high-risk posts in dieting forums on social media. Analyze ED behaviors and mentalities through topic models. Test temporal relationships between weekly submissions to dieting and ED forums.
Website *https://edetectives.wordpress.com/*
Datapalooza 2020, UVA *https://datascience.virginia.edu/pages/data-science-works-and-our-communities*

- Crowdsourced Labeling: web-based data classification workflow: *https://www.zooniverse.org/projects/joyqiu/edetectives*.
- Text Analytics and Natural Language Processing: Text engineering with regular expression; text to images. BOW, Tf-idf (nltk, gensim), POS tagging(spacy), Word Cloud; LSTM, CNN.
- Time Series: trend smoothing, cross-correlation analysis, SARIMA, LOESS, HoltWinters, Granger Causality Test.

[Capstone Project] Climatological impact on diabetes-related ER visits, UVA *06/2019 - 06/2020*
Statistical analysis on 1.8M+ ER patients data from UVA health system and Carilion hospital system, with climatological data in Central Virginia from 2010 to 2017. Web-scraping diabetes-related ICD 9/10 codes to label diabetes-related records; PCA; Linear, Poisson, and Negative Binomial models.