Zikun Chen

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EDUCATION

University of Illinois at Urbana-Champaign GPA: 3.7

Master of Science, Computer Science May 2022

Bachelor of Science, Computer Engineering May 2020

Skills

Programming Languages: Python, R, SQL, Git, Bash, C++, HTML/CSS, PHP, SystemVerilog, C, x86, Java, Lisp

Tools and Technologies**:** Tensorflow, Keras, PyTorch, React, Jupyter Notebook, PostgreSQL, Docker

EXPERIENCE

Decision Support System for Covid-19 | *Research Assistance* May 2020 - Current

Decision support system that provides real-time treatment guidance with explanations | Mentor: Prof. Lui Sha

- Encapsulated medical data into a mining structure (discretization, aggregation, abstraction) with Postgres.
- Handled missing data with various imputation methods (Multiple Imputation and Pattern-Mixture Model).
- Discovered unsupervised representations of patient states with unsupervised learning techniques.

Gene Regulatory Networks Modeling | *Data Engineer* Aug. 2019 - Current

Gene regulatory networks with module-based network **|** Mentor: Prof. Mikel Hernaez

- Generated modules with machine learning method (VBSR) for co-expressed genes with sparse set of regulators.
- Used regression analysis method (LASSO) to generate bipartite graph that represent module's relationships.

Medical Guidance System | *Undergrad Research Assistance* June 2019 - May 2020

Bayesian system for detection of acute disease | Mentor: Prof. Lui Sha

- Transformed diagnosis processes to a Dynamic Bayesian Network.
- Used unsupervised learning methods to solve the issue of data inconsistency and redundancy during data integration.

Network Verification | *Undergrad Research Assistance* Aug. 2019 – May 2020

Transparent data plane failure tolerance for software defined networks **|** Mentor: Prof. Matthew Caesar

- Developed a fault tolerance prototype for large scale computer network (e.g. SDN).
- Pre-computed backup path and reroute traffic in the event of failures.

ECE385 Digital Systems Laboratory | *Undergrad Teaching Assistant* Aug. 2019 – May 2020

- Held weekly office hours abstracting complex problems to make it easier for student to grasp and debug.

Overseas China Education Foundation | *Web Developer* June 2016 – Aug. 2017

- Designed and wrote product and technical specifications.
- Implemented frontend components to mail response portal with PHP framework Laravel.

PROJECTS

Finding Breast Cancer Subtypes Feb. 2019

Characterized breast cancer into four types with Gaussian Mixture Model

- Extracted the coding DNA sequences of transcripts from the BioMart Database.
- Reproduced the subtypes from Supervised Risk Predictor using soft clustering with Expectation Maximization.

Full-Automatic Database Updater Apr. 2019

Created a 3-part data-collecting script in python

- Created a data pre-processing unit which matches all listed car info to the exact car models in the database.
- Made a data storing module which massively store the preprocessed data in MySQL database.

Virtual Bidding in NYISO's Market Mar. 2019

Implemented a virtual trading strategy in New York ISO's electricity markets

- Trained a multilayer perception classifier to predict the sign of difference between day-ahead and real-time price.
- Developed multiple bidding strategies from analyzing the annual reward from stored classifiers.

Pong AI Agents with Reinforcement Learning Oct. – Nov. 2018

Built a Pong game with SARSA and Q-learning agents

- Implemented a continuous and discrete version of the Pong game in python.
- Minimized overfitting by applying reinforcement learning (Experience Replay).