QIPING PAN

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Education

University of Michigan, Ann Arbor	**September 2020 – May 2022**
Bachelor of Engineering in Computer Science (3.88/4.00)	*Ann Arbor, U.S.*

Shanghai Jiao Tong University	**September 2018 – August 2022**
Bachelor of Science in Electrical and Computer Engineering (3.70/4.00)	*Shanghai, China*

Research Experience

Deep Learning-Based Protein Property Prediction **September 2021 - Present**

Advisor: Brian Athey, Wei Zheng *Ann Arbor, U.S.*

- **Objectives:** Explore the significance of a structural feature (L1-depth) in the deep learning-based prediction of post-translational protein property.
- **Responsibilities:** Implemented an end-to-end protein feature extraction program that reads raw data files, computes and outputs the sequence and structural features for about 10,000 raw data files. Constructed a convolutional neural network pipeline with bidirectional LSTM, self attention mechanism and residual layers that takes sequential and structural features to make predictions. We intend to publish the work in the Journal of Bioinformatics.

Zero Shot GAN **September 2021 - Present**

Advisor: Jason Mars *Ann Arbor, U.S.*

- **Objectives:** Systematically experiment the effects of training different language models with an adversarial setting. Explore the best practice in hyperparameters, pretraining tasks and model selection in adversarial training setting. Report the project progress to Hitachi, the sponsor.
- **Responsibilities:** Trained and evaluated Huggingface Electra Base implementation on remote server. Investigated and designed the adversarial training method to apply on GPT model. Constructed the data preprocessor and architecture to conduct the experiment.

Interactive Tensor Transformation Synthesis **August 2021 - Present**

Advisor: Xinyu Wang, Tianyi Zhang *Ann Arbor, U.S.*

- **Objectives:** Because writing functional tensor transformation programs proves to be hard for general users, we want to develop a multi-modal and interactive method to help users synthesize, understand and validate such programs.
- **Responsibilities:** Built a user interface with React.js and MaterialUI to provide various user input to the synthesizer, which generates Tensorflow programs by taking I/O examples and natural language descriptions. Designed and implemented dataflow diagram for Tensorflow programs, which proves to enhance the users' understanding of the generated code. Wrote the literature review on natural language and multi-modal programming parts for the paper to publish in UIST 2022.

Industry Experience

TikTok Web Developer Intern **May 2021 – August 2021**

Advisor: Bo Zhang *Shanghai, China*

- Developed a unit test set using Jest.js and integrated into delivery workflow for automated bug detection.
- Upgraded the user behavior tracking system in order to unify the source into one single database for the convenience of data aggregation and analysis.
- Utilized git hooks to auto-detect whether other files need to update based on the local file change.
- Developed a VScode extension that detects local schema files and auto-complete the attributes for JSON objects.
- Developed an online service that supports batch upgrade in database with progress tracking.
- Refactored code into clearer hierarchy to facilitate the code reuse and management for different business types.

Technical Skills

Languages: Python, C/C++, HTML/CSS, JavaScript/TypeScript, Matlab, Bash, Tex
Frameworks/Tools: Git, Scikit-learn, Tensorflow, Torch, React.js, Jest.js, D3.js, Flask

Service

Writing Consultant   September 2019 – September 2020
UM-SJTU Joint Institute Writing Center   *Shanghai, China*
- Met with students and gave advice on their academic writings regarding humanity courses, English writing courses and application materials. Served over 50 students.

Volunteer Teacher in Needy Areas   January 2020
Lv Chun Middle School   *Yunnan, China*
- Provided teaching support to the local school, including teaching over 100 middle school students Math and Chinese, assisting local teachers by correcting homework, and invigilating exams.
- Gave lectures regarding university life to ignite students' passion for study and future life.

Awards

Scholarships/Remarks
- Dean's list: University of Michigan   **April 2021**
- University Honors: University of Michigan   **April 2021**
- Student Development Scholarship: UM-SJTU Joint Institute   **June 2020**
- ABC Outstanding Undergraduate Scholarship: Shanghai Jiao Tong University   **November 2019**

Competition
- Meritorious Winner: Mathematical Contest In Modeling   **May 2020**