Guoyao Chen

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Center for Dialysis Innovation, University of Washington, Seattle, WA

Education

✧ ***University of Washington***, Seattle, WA *Sep.2018-Jun.2024(expected)*
Ph.D. and M.S. in Chemical Engineering: **Data Science**
Related Courses: Introduction to Machine Learning, Data Science Methods for Research, Software Engineering for Data Scientists, Data Science Capstone, Quantitative Introductory Statistics for Data Science, Method of Engineering Analysis

✧ ***Central South University***, Changsha, PRC *Sept.2014-Jul.2018*
B.E. in Chemical Engineering and Technology | Overall GPA: **88.57/100** (Rank:3/27, Honor Graduate of the Province)
Meritorious Winner (9%), **2017 Mathematical Contest in Modeling**

Skills and Certifications

✧ **Udemy: 2022 Python for Machine Learning & Data Science Masterclass**
✧ **Data and Programming:** Python, SQL, Pandas, NumPy, Matplotlib, MATLAB, VLOOKUP, Blender, Git, Origin
✧ **Machine Learning:** Keras, TensorFlow, PyTorch, Scikit-learn, NLP, LSTM, CNN, Locally-connected

Research & Project Experience

✧ **Forecasting of Printability for 3D Printed Porous Biomaterials using Machine Learning** *Jan.2019-now*
Graduate Research Assistant, *Center for Dialysis Innovation, Seattle, WA*

- Aimed to predict key printing parameter values by a **linear regression model** to improve the printing resolution
- Used **OpenCV** and **computer vision** to quantify the exact pore dimensions and the base test results for data input
- Organized data with **pandas** and formed a mathematical model with the connection of all key parameters
- Forecasting the printability of porous structures using **Logistic Classifier** with **Scikit-learn**

✧ **Development of Predictive Model of Yeast DNA Expression using Deep Learning** *Apr.2019-Jun.2019*
Machine Learning Engineer, *Novo Nordisk Research Center Seattle, Inc. and University of Washington, Seattle, WA*

- Aimed to design a deep learning model to predict yeast DNA expression and compare with the experimental data
- Converted the DNA sequences into **One-Hot sequences** and classified data with start motif position
- Built a **LSTM model** to train 100 million DNA dataset together with a **CNN model** and a **locally-connected model**
- Visualized answer to multidimensional scaling plots with **Matplotlib**, and got positive feedbacks from specialists
- Built a Jupyter Notebook file to do **data mining** in the DNA dataset for non-tech lab staff in Novo Nordisk

✧ **Prediction of Battery Degradation using Machine Learning** *Jan.2019-Mar.2019*
Data Analyst, *University of Washington, Seattle, WA*

- Aimed to develop a hybrid machine learning models to predict battery degradation
- Used **Pandas** and **NumPy** to remove useless data and organized the data in the format for input
- Used **Matplotlib** to visualize the degradation into graphs and presented to the battery researchers
- Built up the model in **Keras**, and used the seq2seq method to improve the prediction rate to more than 90%

Teaching Experience

✧ **Teaching Assistant**, Methods of Engineering Analysis *Sep.2020-Dec.2020*
Department of Chemical Engineering, University of Washington, Seattle, WA

- Used build-in function in python to solve matrix calculations, set up mathematic models for chemical engineering
- Defined a class of functions to quantify the moving liquids under normal conditions
- Used visualization methods like **3D plots**, multidimensional scaling and interaction to interpret the results
- Solving advanced math equations like ODE and PDE with **SciPy** to speed up the research