MABEL QIANQIAN YAO

www.linkedin.com/in/mabelqqy qianqian.yao@ndsu.edu | qianqian6.yao@gmail.com

EXPECTED POSITION & CAREER

Data Scientist/ Machine Learning Engineer/ Faculty Track

EDUCATION & TRAINING

| North Dakota State University, Fargo, US | 2024-2026 |
|---|----------------|
| Doctor of Philosophy in Statistics | GPA: $4.0/4.0$ |
| Concentration: Machine Learning, Data Science, Representation Learning, Graphs | |
| North Dakota State University, Fargo, US | 2022-2026 |
| Doctor of Philosophy in Computer Science | GPA: 4.0/4.0 |
| Concentration: Machine Learning, Data Science, Representation Learning, Graphs | , |
| North Dakota State University, Fargo, US | 2019-2022 |
| Master of Science in Computer Science | GPA: $4.0/4.0$ |
| Concentration: Machine Learning, Data Science, Representation Learning, Graphs | , |
| Tohoku University, Sendai, JP | 2013-2016 |
| Master of Science in Architectural and Building Science | GPA: 3.68/4.0 |
| Concentration: Seismic Evaluation & Damage Assessment, Structural Engineering | • |
| University of California, DAVIS, US | 2/2015-3/2015 |
| Cooperative Laboratory Study Program (training) | , |
| Academic English Program for Science and Technology | |
| Concentration: Structural Engineering | |
| Dalian Jiaotong University, Dalian, CN | 2009-2013 |
| Bachelor of Engineering in Civil Engineering & Software Engineering (double majors) | GPA: 87/100 |
| Concentration: Building Structural Design, Software Development | , |

INTEREST & SKILL

Machine Learning, Statistics, Data Science, Embedding/Representation Learning, Graphs

Molecule Representations, Molecular Property Prediction, Cheminformatics, Bioinformatics, Medicinal Chemistry/ Biochemistry/ Quantum Chemistry, Drug Discovery, Applied Sciences, etc.

FinTech/Quant/Econometrics; Climate Tech/Climate Change, Catalyst Discovery;

Time Series, Outlier Analysis, Risk Analysis, Survival Analysis, Multivariate Analysis, Experimental Design, etc.

Programming Languages

Often Used: Python, R, SAS, Latex, etc.

Scientific Computing: Julia, Matlab, Octave, etc.

Computer Science: Java, SQL, HTML/CSS/JavaSript, Git, Anaconda, etc.

ONGOING RESEARCH

Molecular Data Science in Drug Discovery & Precision Medicine

Chemometrics, Molecular Profiling,

Feature Selection & Feature Extraction,

Molecular Property Prediction,

Descriptor based Statistical Modeling, Sequential Modeling, Graph Modeling,

Drug discovery, Gene Expression, Precision Medicine,

Graph-Level Representation Learning for Chemical Screening.

Catalyst Discovery/ Material Discoveries.

Graph Embedding for Adverse Drug Reaction Detection

Knowledge Graph Embedding, Drug-Drug Interaction Network.

Adverse Drug Reaction in Clinical Trials in Drug Discovery.

Graph Neural Networks

How algorithms learn?

Frameworks of graph neural networks

Outlier Analysis & Anomaly Detection

Time Series Data, Multivariate Data.

Anomaly Detection in Financial Fraud.

Recommendation Systems

Recommendation in e-commerce,

Statistical methods, machine learning, deep learning, graph neural networks

RELATED COURSE PROJECT & RESEARCH PROJECT

| Molecular Data Science, Drug Discovery & Precision Medicine | 2024 |
|--|--------|
| Time Series Forecasting for Electricity Usage, R | Spring |
| Survival Prediction in Colorectal Cancer, R | |
| Feature Extraction for Molecular Profiling in Precision Oncology Analysis | |
| Feature Extraction in Raman Spectrum for Oncology Diagnosis and Staging | |
| Molecule Representations, Multivariate Analysis, Outlier Analysis | 2023 |
| Multivariate Analysis for Discrimination of Carcinogenesis Staging, SAS | Fall |
| Detection and Evaluation of Outliers by Linear Models, R | |
| Molecule Representation Learning for Virtual Screening in Drug Discovery, python | Spring |
| Descriptor based multiple linear regression model for molecule property prediction, python | |
| Graph Representation Learning, Molecule Representation Learning | 2022 |
| Knowledge graph embedding for adverse drug reaction detection | Fall |
| Comparison of Non-Learned and Learned Molecule Representations for Catalyst Discovery | Spring |
| Statistical Methods for Recommender System, python | |
| Graph Representation Learning, Molecule Representation Learning | 2021 |
| Molecular Representation Learning for Catalyst Discovery, python | Fall |
| Graph Representation Learning: a survey on graph convolutional neural network, python | Spring |
| Computer Vision, Natural Language Processing | 2020 |
| Natural Language Processing: text classification, python | Fall |
| Natural language Processing: chatbot as virtual assistant, python | |
| Distributed database built on client-server architecture, java | Spring |
| Multi-label classification based on image similarity, python | |
| Network Mining, Deep Learning, Recommendation | 2019 |
| Implementation of recommender system based on different models, python | Fall |
| Implementation of expert system for real estate recommendation by drools, java | |
| Large scale study of programming languages and code quality in github, python | Spring |
| Network Mining and analysis using deepwalk, line, and node2vec, python | |
| Evaluation of real estate market using deep learning, python | |

PUBLICATION

Google Scholar: https://scholar.google.com/citations?user=S7k_gdkAAAAJ&hl=en

CERTIFICATE

Verified Courses

IBM Data Science Specialization, Coursera

May, 2023

Machine Learning, Coursera May, 2023 https://www.coursera.org/account/accomplishments/certificate/HSNF9PYJVDUW Deep Learning Specialization, Coursera March, 2021 https://www.coursera.org/account/accomplishments/specialization/certificate/FFBNKVM82AXS **Unverified Courses** HarvardX MCB63X: Principles of Biochemistry, edX Spring, 2024 https://www.edx.org/learn/biochemistry/harvard-university-principles-of-biochemistry UTokyoX: Basic Analytical Chemistry, edX Spring, 2024 https://www.edx.org/learn/chemistry/the-university-of-tokyo-basic-analytical-chemistry DavidsonX: Drug Discovery & Medicinal Chemistry, edX Spring, 2023 https://www.edx.org/learn/drugs/davidson-college-drug-discovery-medicinal-chemistry

WORK EXPERIENCE

| Department of Statistics | 2024-2026 |
|---|-----------|
| stat725 Applied Statistics | |
| stat726 Applied Regression and Analysis of Variance | |
| Department of Computer Science | 2019-2023 |
| csci160 Computer Science I | |
| csci161 Computer Science II | |
| Laboratory Assistant, North Dakota State University | Fargo, US |
| Department of Plant Science | 2019-2023 |

(2019fall, 2020spring, 2020summer, 2022summer, 2023summer)

Experimental Design (seeding, planting, harvesting, data collection and entry)

Data Analysis

Structural Engineer Shenzhen, CN

Shenzhen Yuanlizhu Engineering Consultants Co.,Ltd

Teaching Assistant, North Dakota State University

using computer aided engineering tools to design and analyze building structure,

communicate with clients including investors, constructors, designers to optimize the structural design.

Project Assistant
Shanghai, CN

Shanghai Saiyo Construction Technology Co.,Ltd

2016-2017

2017-2019

Fargo, US

Participated in a Japanese project of Shopping Mall Construction in Ningbo, and applied Building Information Modeling (BIM) to construct a virtual model of the building for design and clash detection; also took the role of translator between Japanese and Chinese during the meetings.

Intern Sendai, JP

Yamashita Sekkei INC. Tohoku Branch

9/2015-10/2015

Analyze structures with SNAP, created building model, considered seismic isolators and seismic-control devices, analyzed seismic-response controlled structure and seismic-isolation structure to get seismic performance, created animation;

Drew construction drawings with AutoCAD.

ACTIVITY IN UNIVERSITIES

Student Union, Sports Department , Dalian Jiaotong University

2009-2013

organized and participated in sports activities on campus annually;

Project of Doctoral Degree Program on Science for global safety

Inter-Graduate School program, Tohoku University

2014-2016

Finished all corresponding curriculum including training of specialized seminar of science for natural disasters, Multi-disciplinary and Specialized Basic Subjects about natural disaster generation mechanism, and fundamental subjects of philosophy and sociology;

Activities with other Universities about natural disasters:

Concentrated lectures about development of human culture;

| English | skill | training; |
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Member in NDSU Graduate School, North Dakota State University

2019-2026

Graduate School supports graduate students, graduate faculty, and graduate programs of all NDSU Colleges; Grad School is also the academic home for several interdisciplinary graduate programs;

Member in Center for Writers, North Dakota State University

2023-2026

supporting graduate students, as well as faculty and staff, to become more successful writers;

Member in Graduate Student Council, North Dakota State University

2024-2026

advocating for graduate students' well-being and contributing to a welcoming environment; hosting activities including orientations, game night, monthly open forums;

supporting delivery of Student Research Day, and representing graduate students on Graduate Council;

Writing Camp, North Dakota State University

2024 Spring

14 Days Writing Challenge program, writing on course project, grant, etc.

MHFA Training, North Dakota State University

2024 Spring

2-hour self-paced online course and a 4.5 hour in-person Skills Application instructor-led session; MHFA certification;