

# MABEL QIANQIAN YAO

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## EXPECTED POSITION & CAREER

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**Data Scientist/ Machine Learning Engineer/ Faculty Track**

## EDUCATION & TRAINING

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**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

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**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/JavaScript, Git, Anaconda, etc.

## ONGOING RESEARCH

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**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**

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### **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

Evaluaitoion of real estate market using deep learning, python

## **PUBLICATION**

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Google Scholar: [https://scholar.google.com/citations?user=S7k\\_gdkAAAAJ&hl=en](https://scholar.google.com/citations?user=S7k_gdkAAAAJ&hl=en)

## **CERTIFICATE**

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### **Verified Courses**

**IBM Data Science Specialization**, Coursera

May, 2023

<https://www.coursera.org/account/accomplishments/professional-cert/NJ2PYKM3KYDU>



English skill training;

**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;