Nan Li

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Education

PhD in Data Science
University of Zurich (UZH)

Oct. 2024 - Current
Zurich, Switzerland

- **Research interests**: Machine Learning, Human-Computer Interaction, Explainable Artificial Intelligence, EEG, Eye-tracking, Information Visualization

MSc in Computer Science (Major: Artificial Intelligence)
University of Zurich (UZH)

Sep. 2022 - Oct. 2024
Zurich, Switzerland

- **Research interests**: Explainable Artificial Intelligence, Human-Computer Interaction, Time-Series Classification
- **Master Thesis**: Interpretable Machine Learning Algorithm for Drunk Driving Detection
- **Master Project**: Explainability method for Recommender Systems

BEng in Software Engineering
Beihang University (BUAA)

Sep. 2016 - Jun. 2021
Beijing, China

- **GPA**: 87/100 (Top 17%)
- **Thesis**: Project Review Assistant System Based on BlockChain

Representative Projects

Interdisciplinary Traffic Medicine and ADHD Drug Holidays
Institute of Forensic Medicine - UZH

Oct. 2024 - Current
Zurich, Switzerland

- **Objective**: This research aimed to bridge critical gaps in the understanding of ADHD stimulant medication holidays and their effects on driving safety, enabling evidence-based, informed decision-making for patient care.
- **Contributions**:
  - Machine Learning: Utilize time-series machine learning models with driving data, eye-tracking, and EEG data to study the interaction of cognitive states and driving behavior.
  - Neuroscience: Investigate the neurocognitive effects of stimulant medication holidays on driving performance, including correlations with stimulant levels in biological samples and psychometric outcomes.
  - HCI: Design and implement a visualization platform to make machine learning decisions more intuitive and explainable, facilitating understanding for both analysis and non-specialist audiences.

Multi-Robot Interactive Simulation and Analysis Platform
Programming, Education, and Computer-Human Interaction Lab (PEACH Lab) - ETHz

Mar. 2024 - Nov.2024
Zurich, Switzerland

- **Objective**: An interactive simulation and visualization framework to facilitate quadrupedal locomotion learning.
- **Contributions**:
  - Formative Study: Conducted interviews with robotics experts to identify key challenges and strategies in locomotion policy analysis.
  - Framework Implementation: Designed and developed the framework, an interactive tool integrating simulation, trajectory, metrics visualization, and key frame capturing for locomotion policy analysis.
  - User Evaluation: Conducted a user study with robotics practitioners to assess the tool's effectiveness, demonstrating its ability to provide immediate insights and enhance exploratory analysis.

Interpretable Machine Learning Algorithm for Drunk Driving Detection
Bosch IoT Lab | ETH Zurich | University of St. Gallen

Dec. 2023 - Aug.2024
Zurich, Switzerland

- **Objective**: Develop interpretable machine learning algorithms to detect drunk driving using CAN bus data.
- **Contributions**:
  - Analyzed CAN bus and other related data from real vehicles to create accurate models.
  - Developed and trained interpretable time-series classification models including logistic regression, CNNs, RNNs, and state-of-art multivariate time-series classification models.
  - Explored techniques for comprehensive explanations of model predictions.

Explainability Method for Recommender Systems   Feb. 2023 - May. 2024

Dynamic and Distributed Information Systems Group - UZH   Zurich, Switzerland

- **Objective**: Research and implement explainable methods for recommender system.
- **Result**: Paper submitted to the ACM Conference on Recommender Systems (RecSys)
- **Contributions**:
  - Extended the Cornac Python package with new explainable recommend models, explanation algorithms, and evaluation metrics.
  - Developed a pipeline to facilitate the workflow and documented a detailed report.
  - Specialized in matrix factorization-based models and explanation methods.

Project Review Assistant System Based on Block Chain   Nov. 2020 - Jun. 2021

School of Software - BUAA   Beijing, China

- **Objective**: Develop a project review web application utilizing blockchain technology and distributed storage.
- **Contributions**:
  - Developed the frontend using JavaScript and TypeScript with React and backend with Java and Kotlin using SpringBoot, and MongoDB.
  - Integrated blockchain technology using Hyperledger Fabric and Go-lang, with IPFS for distributed storage.
  - Enabled functionalities such as project uploads, reviews, ratings, and reviewer suggestions.

Interactive Instrument Dombra: Blending Tradition with Technology   Mar. 2017 - Oct. 2018

National Innovation and Entrepreneurship Training Program   Beijing, China

- **Objective**: Facilitate Dombra learning and practicing without the need for an actual human teacher.
- **Contributions**:
  - As the team leader, spearheaded project coordination, facilitated collaboration among teachers and students, and established connections with instrument crafters.
  - Transformed the traditional musical instrument Dombra into an interactive instrument by integrating sensors and controlling it with a microcontroller.
  - Designed and developed a user-friendly mobile application to support learning and practice for students.

Teaching Experience

Fall 2023	**Tutor**: Foundations of Data Science (Graduate Level)	UZH
Fall 2020	**Teaching Assistant**: Compiler Theory (Undergraduate Level)	BUAA
Spring 2020	**Lead Teaching Assistant**: Object-Oriented Programming (Java) (Undergraduate Level)	BUAA
Fall 2019	**Teaching Assistant**: Algorithm Analysis and Design (Undergraduate Level)	BUAA

Awards and Honors

Jun. 2021	**Honor Certificate**: Outstanding Graduate of Beihang University
2020, 2019, 2018	**Scholarship**: Excellent Scholarship for Academic Performance (3 times)
2019, 2018	**Scholarship**: Excellent Scholarship for Social Work (2 times)
2019, 2017	**Honor Certificate**: Merit Student (2 times)
Jan. 2019	**Scholarship**: Lee Kum Kee Innovation Scholarship

Skills

Programming Languages	Python, Java, C++, C, JavaScript, TypeScript, SQL, Kotlin, Golang, Matlab, LaTeX
Machine Learning	PyTorch, TensorFlow
Application Development	React, Vue, QT, Spring Boot, MySQL, MongoDB
Version Control and Other Tools	Git, SolidWorks
Languages	Chinese (Native), English (C1)
Soft skills	Problem-Solving, Time Management, Collaboration, Adaptability, Leadership