

# Yujuan Fu

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## Academic Proficiency

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- **Computing skills:** predictive modeling, data mining, database management, website design, machine learning, deep learning.
- **Statistics:** statistical modeling, hypothesis testing, regression, correlation analysis, survival analysis, bayesian data analysis, time series analysis.
- **Programming languages:** Python, JAVA, R, SQL, Matlab, C++
- **Outstanding qualities:** a quick learner, a passionate contributor, a strong collaborator, with self-motivation, rigorous and disciplined working style.

## Education

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### University of Washington - Seattle

- **Ph.D.**

*Biomedical Informatics, supervised by Prof. Gang Luo, UW Medicine, Sep 2020 - Apr 2025 (planned)*

### University of Michigan - Ann Arbor

- **B.S.** (dual-degree)

*Data Science, Statistics and Mathematics (Minor), College of Engineering, Sep 2018 - Apr 2020*

- GPA: 3.85/4.00
- Awards: Dean's List, University Honors, James B. Angell Scholar

### Shanghai Jiao Tong University

- **B.S.** (dual-degree)

*Electrical and Computer Engineering, Dual Degree with University of Michigan, UM-SJTU Joint Institute, Sep 2016 - Aug 2018*  
*Shanghai, China*

- GPA: 3.54/4.00
- Awards: 2020 Shanghai Outstanding Graduates, John Wu & Jane Sun Outstanding Scholarship (Top 5%), Merit Student, Dean's List, Volunteer Spirit Scholarship

## Project Experience

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### Protein Contact Map Prediction

*Capstone Design Project, Prof. Yang Zhang's Lab, Department of Bioinformatics, University of Michigan, Oct 2019 - Apr 2020*

- Collected and cleaned protein sequence and structural data, visualized protein 3D structures.
- Designed and implemented a predictive model for 3D protein structure using convolutional neural network (CNN) and network architecture search, boosted the accuracy from 17% to 35%.

### Database Management

*Class Project - EECS 484 Database Management Systems, University of Michigan, Jan 2019 - May 2019*

- Designed and implemented "Facebook Oracle", to simulate the data storage and answer queries about Facebook friend relationship.
- Exported SQL data to JSON using JDBC.

### In-Hospital Mortality Prediction of Intensive Care Unit (ICU) Patients

*Student, Big Data Summer Institute, Department of Biostatistics, University of Michigan, Jun 2019 - Jul 2019*

- Cleaned and visualized ICU patients' longitudinal electronic medical record (EMR) data.
- Imputed missing information using correlation analysis and regression.
- Developed a convolutional neural network model for in-hospital mortality based on a CNN model, and achieved an accuracy increase from 82% to 85%.

## Research Experience

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### Tonotopy Reconstruction of Mouse Cochlear Duct

*Research Assistant, Prof. Joerg Waldhaus's Lab, Medical School, University of Michigan, Oct 2019 - May 2020*

- Designed and implemented a tonotopy reconstruction method based on Principal Component Analysis, constructed a 3D duct structure model using single cell RNA-Seq data.
- Discovered 118 gradiently expressed genes along the tonotopic axis, and came up with a dynamic intercalating model to explain the proliferation mechanism.

### TAD Structure Dynamics

*Research Assistant, Prof. Jie Liu's Lab, Department of Bioinformatics, University of Michigan, May 2019 - Aug 2019*

- Define a metric for chromosome contact, came up with a curve-clustering method, identified types of variation dynamics for TAD boundaries.
- Proved the chromosome substructure, namely topologically associating domains (TAD), existence along the cell cycle.

### Problem Diagnostics for Detroit Connector (Public Transportation)

*Research Assistant, supervised by Dr. Aditi Misra, University of Michigan Transportation Research Institute, Feb 2019 - Apr 2019*

- Designed and distributed online questionnaires for Detroit Connector riders.
- Analyzed the survey data using correlation analysis, diagnosed problems of the Detroit Connector such as route planning, safety, buses' inside environment and bus stops' conditions, improved ridership by 53%.

## Leadership Experience

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### Miyuan Volunteering Team

*Vice-captain, Shanghai Jiao Tong University, Shanghai, China, May 2017 - Aug 2018*

- Supervised Wechat official account operation, Miyuan culture development, poster design, and mascot design, etc.
- Held weekly seminars on photography and video clips in the Propaganda Department.
- Hired volunteers, provided nursing training, and led volunteers to accompany mentally disabled people once every two weeks in Sunshine House and Yuemiao Home.
- Oriented and carried out detailed activity and propaganda plans with other captains to make Miyuan one of the Top 10 Volunteering Teams in Shanghai Jiao Tong University, 2017.

### Aid Education in Weiliang Primary School

*Volunteer, Miyuan Volunteering Team, Yunnan, China, Dec 2016 - Jan 2017*

- Gave classes, organized art and engineering workshops, and offered help in coursework thirty hours per week.
- Wrote and published articles about the lives of school children, local teachers and volunteer teams in the official account on Wechat, earned a 10,000 RMB funding for local students and schools.

## Publications

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1. Shuze Wang, Joerg Waldhaus, Jie Liu, Mary Lee, **Yujuan Fu**, Scott Jones and Jenna Diegel. *Single Cell Chromatin Accessibility Delineates Cellular Identities of the Neonatal Organ of Corti*. iRNA COSI: Integrative RNA Biology - under review
2. **Yujuan Fu**, Joerg Waldhaus, Jie Liu, Shuze Wang, Mary Lee and Scott Jones. *Transcriptional Regulation of Gene3: Control Differentially Expressed Genes In Cochlear Duct, Mouse Embryo*. - under preparation