

Zipei (Raye) Liu

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EDUCATION

Cornell University, College of Engineering, Ithaca, NY

May 2022, Cum Laude

Bachelor of Science, Operations Research and Engineering

Bachelor of Science, Computer Science (Minor)

Dean's List

Cornell University, College of Engineering, Ithaca, NY

Expected May 2023

Master of Engineering, Computer Science

Relevant Courses:

- **CS:** Data Structure & Functional Programming; Objective Oriented Programming; Big Messy Data; Algorithms Analysis; Computer Vision; Computer Graphics; Natural Language Processing; Human & Computer Interaction; Operating System; Database; Reinforcement Learning
- **OR:** Optimization; Probability & Statistics; Linear Algebra, Real Analysis; Stochastic Process; Simulation
- **Other:** GIS; Game Theory; Biostatistics & Genetics

RESEARCH/PROJECT EXPERIENCE

Population Segmentation in Healthcare System, *Research Group Member*

February 2020 - Fall 2021

- Using machine learning and data mining to develop new clustering algorithms for sparse high-dimension datasets like MIMIC-III and SPARCS database to divide patients into homogenous clusters according to their healthcare records and needs that help hospitals provide healthcare for patients. Clustering methods are trained and validated using medical records including healthcare expenses, mortality, chronic disease diagnosis records and ICD-9, and hospitalization length.
- Project was originally launched by Canadian doctor Laura Rosella. Professor advisor: Madeleine Udell, ORIE Department of Cornell Engineering

Study of Gender Bias in Wikipedia, *Research Group Member*

Fall 2022 - Present

- Using natural language processing techniques and deep learning algorithms Empath and GloVe latent space vector embedding to study gender bias in the Wikipedia contributor community's gender demographics and the lexical and sentiment differences between Wikipedia biographies written about men and women.
- The project was initiated in studying human computation and crowdsourcing, advised by Professor Haym Hirsh, Cornell CIS Department.

Image Analysis for Bacteria Boundary Detection and Information Extraction, *Independent Project* **Fall 2022 - Present**

- Using Keras-OCR, neural network models, deep learning and computer vision imaging analysis techniques to detect and extract information about bacteria's size, length, and width, as well as their position inside the microfluid device based on the imaging data collected from the biomechanics device
- Master project, advised by Professor Christopher Hernandez, Cornell Engineering

A Study of Canada Goose Habitat in California, *Independent Project* **Spring 2022 - Summer 2022**

- Using GIS, Google Earth Engine and Java to demonstrate and analyze the distribution and characteristics of the Canada goose habitats in California for mating and migrating seasons, and the geographical triggers behind the existence of such habitats. Spatial analysis of the Canada goose habitat regions is launched using data including the regions' land cover type, vegetation status, elevation, and surface water resources distribution.

PROFESSIONAL EXPERIENCE

UnionPay, Shanghai, China, *Data Analyst Intern*

May – August 2019

- Trained and worked on the transaction data forecasting and analysis project using machine learning and time series analysis in the Data Analysis Center of UnionPay based on the total value of payment transactions. Worked on the automation of generating the daily report for abnormal transaction statistics using Python

CAMPUS INVOLVEMENT

Cornell CIS, CS Department, *Graduate Teaching Assistant*
August 2022 - Present

Cornell Engineering, ORIE Department, *Teaching Assistant*
January 2021 - Present

Cornell Engineering, Math Department, *Teaching Assistant*
January 2019 - May 2021

Cornell Data Science Project Team, *Team Member*
January 2020 - March 2021

Cornell University Chorus, *Member*
February 2020 - Present

SKILLS

Programming: Python, Java, R, SQL, AMPL, GIS, JavaScript, OCaml, MATLAB, LaTeX

Media: Photoshop, Procreate, Blender, ZBrush

Language: Mandarin (fluent)