

Qilin Ye

yeqilin@usc.edu | +1 (858) 205-2077 | yql-scorpion.github.io

EDUCATION

University of Southern California, Los Angeles, CA

September 2020 - Present

B.S. in Mathematics, with honors, GPA 4.00/4.00

B.S. in Computer Science (2022 - present), GPA 3.94/4.00

M.S. in Applied Mathematics (2021 - present), GPA 3.95/4.00

Minor in musical studies (former piano major), under guidance of Dr. Lucinda Carver

RESEARCH EXPERIENCE

Directed Research in Natural Language Processing

Do Transformers Learn Algorithms? A Case Study on Graph Problems

August 2023 - Present

Ongoing thesis under Prof. [Robin Jia](#) and Prof. [Vatsal Sharan](#), exploring Transformer models' ability to "learn" human-interpretable solutions to algorithmically-generated tasks. Pattern spotting and followup analysis were done mostly after reverse engineering various Transformer models.

Improving Large Language Model Fact Editing via Localization Results

April 2023 - July 2023

Independent research supervised by Prof. [Robin Jia](#), focusing on optimizing *knowledge editing* of LLMs. Utilized PyTorch and data analysis skills to reveal (i) *tracing effect* is a good indicator of successful edits and (ii) a statistically significant trade-off exists between robustness and precision.

Directed Research in Functional Analysis (Mathematics)

December 2020 - May 2021

Under Prof. [Wojciech Ożański](#); independently derived an alternate proof to the Banach-Steinhaus Theorem.

PROJECTS & OTHER EXPERIENCE

CSCI-310: PlanMyDay

Fall 2023 Semester

An Android application designed for tourists to explore LA, particularly USC, and to plan their itineraries.

Contributed by implementing (i) an authentication system using Firebase, (ii) real-time traffic data retrieval, (iii) Google Maps API for route previews, and (iv) a clustering algorithm for optimizing multi-day trips.

CSCI-201: DormUtils

Fall 2022

A web application designed for college dorm mates to manage living expenses, featuring a synchronized shopping list and an internal algorithm for optimized cost distribution among members.

Contributed by designing and implementing (i) key front-end pages using HTML/CSS and (ii) the core "internal algorithm," drawing concepts from the "online load-balancing problem."

Author of Official Lecture Notes: [MATH-425a](#) (Real Analysis, Fall 2021), [CSCI-270](#) (Algorithms, Spring 2024)

Also maintained (unofficial) \LaTeX lecture notes over a dozen other other courses, publicly available [here](#).

Teaching & Mentoring

Teaching Assistant, MATH-425a, Undergraduate Real Analysis I

Fall 2021

Supplemental Instructor (undergrad TA), MATH-226, Multivariable Calculus

Fall 2021 & Spring 2022

Also mentored dozens of students over a variety of upper-division and graduate courses throughout all semesters, most notably in mathematical analysis, statistics, and theory of algorithms.

RELEVANT SKILLS & COURSEWORK

Programming and Computing: Python (especially PyTorch), MATLAB, R; C, C++, Java/Kotlin, HTML/CSS; \LaTeX .
Courses: Algorithm Theory || Machine Learning || Software Engineering || Android || Systems || Internetworking

Mathematics: Data Analysis || Statistical Inference || Stochastic Process || Mathematical Analysis (real, complex, functional) || Number Theory || Numerical Analysis || Measure Theory || Theoretical ML

AWARDS AND HONORS

Phi Beta Kappa

2022

Renaissance Scholar

2023

• Awarded to USC undergraduates who pursue widely separate fields of studies