Zoya Khan

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(501)-902-9881

EDUCATION

Columbia University *expected May 2027*
B.A. in Cognitive Science, specialization in computational neuroscience
Minors in Computer Science and Anthropology

RESEARCH EXPERIENCE

Zuckerman Mind Brain Behavior Institute *Sep 2024 - Present*
Research Assistant
Losonczy Lab, PI: Dr. Attila Losonczy

- Developed Python-based data pipelines and analysis framework to analyze behavior data and neural recordings from two-photon calcium imaging experiments.
- Perform stereotaxic surgeries on mice: viral injections and cannula and headpost implantations.
- Train mice daily on decision-making paradigms within virtual reality (VR) environments.
- Create various cued and stimulation-centered VR tasks, assessing efficacy via Python pipelines, and designing modifications to address any deficiencies.

New York State Psychiatric Institute/CU Irving Medical College *Aug 2024 - Present*
Research Assistant
Bath Lab, PI: Dr. Kevin Bath

- Investigate effects of intergenerational early life adversity on maternal care and offspring outcomes by scoring maternal behavior (kicking, circling, etc) with EthoVision XT.

Independent projects, Columbia University
Cognitive Flexibility Through Context-Dependent Memory Encoding: How Latent Task Structures Drive State Orthogonalization in the Hippocampus
Paper for PHIL 3655: Topics in Cognitive Science and Philosophy, Dr. Brendan Fleig Goldstein, Spring 2025

- Situates a 2025 study on cognitive maps and orthogonalization in the hippocampus within Cameron Buckner's theory of Domain General Modular Architecture. I advocate for a restructuring of our understanding of memory's function and organization, not as a passive repository of sensory inputs, but as a dynamic system that constructs task-relevant distinctions between overlapping experiences. *(Link)*

Image Quantization via k-means Clustering for Analyzing Oil Spill Data
Project for MATH 2015: Linear Algebra and Probability, Dr. Evan Sorenson, Fall 2024

- Writeup detailing implementation of k-means clustering algorithm. Findings explore limitations of the algorithm in analyzing dynamic datasets with feature and environmental variability. *(Link)*

PROFESSIONAL EXPERIENCE

Zuckerman Mind Brain Behavior Institute, Columbia University *Nov 2024 - Present*
Undergraduate Student Liaison

- Executed 3 workshops (on data analysis with Python, crafting abstracts and poster presentations, and navigating undergraduate research) and 6+ networking socials (with around 30 attendees each).
- Propose professional development strategies and maintain communication between undergraduate student researchers and institutional leadership.

Computer Science Department, Columbia University   *Jan - May 2025*
Workshop Assistant, [COMS 1404 Emerging Scholars Program](#)

- Facilitate weekly lessons for cohort of 15 undergraduates, guide collaborative problem-solving, and work with ESP teaching staff to adapt lessons and assess student performance.

- Introduce students to advanced topics in CS: Natural Language Processing, Computer Vision, Machine Learning during twelve-week course.

Museum of Discovery, Little Rock, AR
Girls In STEM Program Assistant   *May - July 2024*

- Facilitate mentorship sessions and plan and execute STEM programming (introducing STEM career pathways and basic STEM experiments) for 20 middle school students weekly.

- Organize GiS databases, analyze past participant data, and conduct interviews and surveys to assess program efficacy.

Bank of America Student Intern   *June - July 2023*

- Wrote grants (50,000; MoD later received) for STEM outreach to Title 1 schools in Jefferson County, Arkansas.

- Designed activities for implementation in the museum and outlined facilitation guides for each program.

- Data entry, analysis, and summary reports for museum outreach and attendance.

Junior Achievement AR, Little Rock, AR   *June - July 2023*
Bank of America Student Intern

- Created marketing material, taught financial literacy classes to elementary school kids, and planned a fundraiser (raising ∼3000 from start to finish).

CAMPUS INVOLVEMENT

Columbia University Undergraduate Journal of Science   *July 2024 - Present*
Editor, The Scientist

Columbia Neuroscience Society   *Sep 2024 - Present*
Organizing Committee Member

- Spearheaded 2025 Encephalon, the annual undergraduate neuroscience conference at Columbia, with more than 30 student presenters/posters and 50 attendees.

The Columbia Daily Spectator   *Sep 2023 - Aug 2024*
Senior Staff Writer, City News

SKILLS

Programming: Java, Python, LaTeX

Languages: English (native), Hindu (native), Urdu (native)

Other Interests: Painting, relief printmaking, exploring nature, cooking new food