Heng (Hugo) Zhao

qgg5se@virginia.edu | +1 (336) 508 8645

EDUCATION

Wake Forest University   Winston-Salem, NC
B.S. in Computer Science and B.S. in in Statisticsv| member of Upsilon Pi Epsilon| Cum Laude
John W. Sawyer Award: 2025, WFU CS Department, awardee   *Expected May 2025*
*CRA Outstanding Undergraduate Research Awards***:** 2024-2025 Honorable Mention
Dean's List: 2021 Fall, 2022 Spring, 2022 Fall, 2023 Fall, 2024 Spring, 2024 Fall, 2024 Spring;
Wake Forest Research Fellowship: $4,000 Recipient;
Undergraduate Honors Thesis: Episodic or Semantic Memory? An Empirical Study on Large Language Models (Computer Science), Structure and cohesion in word embeddings (Statistics)

RELEVANT COURSEWORK

Multivariate Statistics, Networks: Models and Analysis, Neural Network & Deep Learning, Operating Systems, Computer System I&II, Programming Languages, Data Structure and Algorithms, Linear Model, Statistical Inference, Probability, Algorithm Design and Analysis, Linear Algebra and Differential Equations (UC Berkeley), Ordinary Differential Equation, Applied Gen Linear Models, Design and Sampling, Multivariable Calculus, Software Engineering, Discreet Mathematics, Numerical Linear Algebra (spring 2025), Computational Statistics (spring 2025)

RESEARCH EXPERIENCE

Chen's Modeling and Learning Lab, Wake Forest University   Winston-Salem, NC
Researcher advised by Dr. Minghan Chen   *Sep 2021–Oct 2022*
• Conducted research on continual learning strategies for neural networks; adapted physics-informed neural networks (PINNs) for complex biological models.

Clinical Image Analysis Lab, WFU School of Medicine/Atrium Health   Winston-Salem, NC
Center for Artificial Intelligence Research, internship advised by Dr. Mostafa Rezapour, and Dr. Bayram Annanurov   *Oct 2022–Dec 2023*
• Explored machine learning applications in human organoid development and COVID-19.

Yang Research Group, Wake Forest University   Winston-Salem, NC
Researcher advised by Dr. Fan Yang   *Sep 2023–Present*
• Developed a Gaussian Concept Subspace (GCS) framework in collaboration with Dr. Fan Yang (WFU), Dr. Mengnan Du (NJIT), and Haiyan Zhao (NJIT). Co-authored 1 ICLR conference paper (accepted).
• Investigated parallels between human memory and LLM knowledge representation (CS honors thesis).

Berenhaut Research Group, Wake Forest University   Winston-Salem, NC
Researcher advised by Dr. Kenneth S. Berenhaut   *Sep 2024–Present*
• Studied aspects of structure, locality, density and distance in pre-trained word embeddings (Statistics honors thesis).

PUBLICATIONS

• H. Zhao, **H. Zhao**, B. Shen, A. Payani, F. Yang, M. Du, "Beyond Single Concept Vector: Modeling Concept Subspace in LLMs with gaussian Distribution," ICLR, 2025

ORAL AND POSTER PRESENTATIONS

• "A Quick Peek to LLMs on Their Working Mechanisms," URECA Day: A showcase of undergraduate scholarship and creative work, Wake Forest University, Winston-Salem, NC, September 27, 2024
• "CS Seminar I", WFU CS department, Wake Forest University, Winston-Salem, NC, September 2, 2024

ORGANIZATIONS

Data Fest, Wake Forest University   *Jan 2023– Mar 2025*
Robotics Club, Wake Forest University   *Aug 2021– May 2023*
Chinese Students & Scholars Association, Wake Forest University   *Aug 2021– May 2022*
Asian Men's Basketball Team, Wake Forest University   *Aug 2021– Present*

ADDITIONAL SKILLS & INTERESTS:

Programming Languages: Python, C, Java, R, Unix Shell, LaTeX, MATLAB, STATA, SAS;
Interest: Jazz music; (alto/tenor/barton) saxophone; basketball, fencing, swimming