Zixin (Stan) Wan

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EDUCATION

Bachelor of Science in Computer Science & Biology *Sept. 2022 – May 2026 (Expected)*
Brandeis University Waltham, MA

- GPA: 3.72/4.00 | Dean's List: Spring 2025, Fall 2024, Spring 2024, Fall 2023, Spring 2023
- Relevant Coursework:
  Computer Science: Advanced Programming Techniques in Java, Data Structures, Linear Algebra, Discrete Structures, Theory of Computation, Information Visualization, Operating Systems, Natural Language Processing
  Biology / Neuroscience: Computational Neuroscience, Physiology, General Biology Laboratory, Organic Chemistry and Lab, Data Analysis and Statistics Workshop

RESEARCH EXPERIENCE

Topic: Mapping Motion Selectivity and Speed Tuning in Mammals
Undergraduate Researcher | Supervisor: Stephen Van Hooser *Sept. 2024 – Present*
Van Hooser Lab, Brandeis University Waltham, MA

- Conducted *in vivo* **2-photon microscopy** data analysis on the mammalian visual cortex to investigate neural selectivity to stimuli on direction, spatial frequency, and temporal frequency.
- Developed custom **MATLAB pipelines** to process 10+ raw experiment results of up to **1,000** neurons, generating tuning curves, performing statistical analyses (ANOVA, t-test), and mapping responses.
- Committing **10** hrs./week during semesters and **full-time** in the summer. Presenting and reviewing literature synopsis with postdoctoral researchers and PhD students in weekly lab meetings.

Topic: Drug Development for Age-related Macular Degeneration
Research Assistant | Supervisor: Jingfa Zhang *July 2025 – Aug. 2025*
The C-MER International Eye Research Center of the Chinese University of Hong Kong, Shenzhen Shenzhen, China

- Designed and executed an ARPE-19 cell model experiment to test Bufallin's effects on preventing Epithelial - Mesenchymal Transition (EMT), applying quantitative analysis of western blot and qPCR data.
- Applied statistical methods to assess treatment effects, contributing to studies on Subretinal Fibrosis pathogenesis.
- Reviewed **100+** peer-reviewed papers on Dry AMD research and therapeutics; authored *Dry Age-Related Macular Degeneration: Pathogenesis, Current Therapeutics, and Future Prospects.*

Topic: Understanding the Function of Circular RNA
Undergraduate Researcher | Supervisor: Sebastian Kadener *Sept. 2024 – Dec. 2024*
Kadener Lab, Brandeis University Waltham, MA

- Developed proficiency in **R**, especially the **SCENIC** workflow; gained experience working with **Seurat** objects.
- Processed raw metadata of **500+** cells; performed single-cell GRN clustering and bulk RNA sequencing.

INTERNSHIPS

Software Engineer Intern *May 2024 – Aug. 2024*
Noah AI Shanghai, China

- Built and optimized computational pipelines (Python, Linux) for single-cell RNA-seq datasets (**>100k cells**).
- Conducted apoptosis and proliferation pathway analysis using bioinformatics methods.
- Reviewed and summarized **10+** research papers weekly to guide analysis strategies.

Biology Research Intern *July 2023 – Aug. 2023*
Antengene Corporation Shanghai, China

- Engineered overexpression cell lines using **lentivirus packaging** for early-stage drug discovery.
- Performed PCR, protein gel electrophoresis, and cell culture experiments.
- Committed full-time (**50** hrs./week**)** lab operation and shared **independent** reports in corporate meetings.

PAPERS & PUBLICATIONS

Wan, Z. and Van Hooser, S.D. (expected 2026). Motion and speed tuning properties in the ferret visual cortex. *Senior Honors Thesis, Brandeis University*. *In progress.*

PROJECTS

Neural Imaging Analysis Tool | *Van Hooser lab, Brandeis University*

- Structured MATLAB pipelines for statistical analysis of 2-photon imaging and data visualization.
- Includes independent repository of 10+ scripts and contribution to Neuroscience toolbox developed by **VH lab**.

Dependence of Dendritic Calcium on Sodium Conductance | *NBIO 136a: Computational Neuroscience, Brandeis University*

- Modeled the role of sodium conductance in calcium homeostasis using the *Pinsky–Rinzel* neuron model.
- Implemented and analyzed simulations in 200+ lines of Python code with NumPy**,** generating visualizations to support findings.

Website: Good Health and Well-Being | *COSI 116A: Information Visualization, Brandeis University*

- An open-source interactive website using JavaScript (D3), HTML, and CSS to promote social welfare awareness.
- Created a world map visualization of UN Sustainable Development Goal (SDG) health indicators, including global SDG scores and maternal mortality ratios.

EXTRACURRICULAR ACTIVITIES

Mentor *Sept. 2023 – Present*
Brandeis Boxing Club Waltham, MA

- Led weekly training sessions for **20+ members**; mentored newcomers in boxing techniques and sparring.
- Organized up to **5 exhibition matches per semester** and coordinated competitions with other institutions (e.g., *Babson College*, *Nonantum Boxing Club*).

SKILLS

Programming & AI
Proficient in Python, R, MATLAB, C, C#, Java, for scientific computing, statistical modeling, and simulation.
Experienced in JavaScript, HTML, CSS for interactive data visualization and web-based applications.
Artificial Intelligence: Python-based NLP algorithms, LLM model training.

Data Analysis Tools
Skilled with Pandas, NumPy, Scikit Learn, Matplotlib, pySCENIC for statistical analysis, and visualization.
Version control and workflow management with Git; computational environments using Linux (WSL).

Laboratory Techniques
Molecular Biology: PCR, qPCR, SDS-PAGE, Western Blot, ELISA
Cell Biology: Primary and immortalized cell culture, microscopy imaging, and analysis
In vivo Models: *Drosophila*, *mouse*, and *ferret*; anesthetic injections, dissections, and related surgical procedures

Languages
English (Fluent), Mandarin (Native)