

ELLIE KIM

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EDUCATION

AUG 2021- MAY 2025	The University of Texas at Austin B.S. in Neuroscience <ul style="list-style-type: none">• Minor in Computer Science• Minor in Computational Engineering• Minor in Data Science• Minor in Applied Statistical Modeling B.A. in Government <ul style="list-style-type: none">• Minor in Philosophy of Law	GPA 3.97
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Relevant Coursework: Genetics, Neural Computation, Neural Systems I, II, Neural Systems III: Quantitative Tools, Elements of Statistics, Elements of Data Science, Elements of Computers and Programming, Elements of Software Design

SKILLS

Programming Languages: Proficient in Python, R, Familiar with Bash, Exposed to C++, HTML

Technical Skills: bioinformatics, genomic data analysis, data visualization, cluster computing, certified MRI Level 1 user

Languages: Fluent in Korean

RESEARCH EXPERIENCE

OCT 2022- DEC 2023	The University of Texas at Austin (Mauk Lab) <i>Research Assistant</i> <ul style="list-style-type: none">• Conducted research on neural computation using a conductance-based spiking network model• Managed a project analyzing the efficacy of synaptic plasticity models for network performance• Led a comparative project on cerebellar cell learning rates in a computational simulation• Developed scripts to visualize neuron spike activity in raster plots and PSTHs
JUN 2023- AUG 2023	MD Anderson Cancer Center (Akdemir Lab) <i>Summer Research Trainee</i> <ul style="list-style-type: none">• Developed a novel algorithm to detect recurrently associated cancer genes in chromatin loop dataset• Conducted bioinformatic analysis to classify molecular subtypes of brain tumor samples based on gene expression• Proficiently handled large-scale genomic data on cluster computing environment• Actively contributed to lab activities through journal club presentations and mentoring
AUG 2022- OCT 2022	The University of Texas at Austin (Dunsmoor Lab) <i>Research Assistant</i> <ul style="list-style-type: none">• Conducted MRI scans on patients with PTSD while adhering to established safety protocols• Analyzed data through efficient cleaning and manipulation using Python's pandas and NumPy libraries
NOV 2021- OCT 2022	The University of Texas at Austin (Mrazek Lab) <i>Research Assistant</i> <ul style="list-style-type: none">• Developed a web scraping technique to prospect potential clients• Designed a data collection strategy that leveraged a federal freedom of information law• Created visualizations using Python scripts to effectively present findings and insights

- Presented a comprehensive overview of web scraping and HTML parsing

MAY 2022-
JULY 2022

MD Anderson Cancer Center (Akdemir Lab)

Summer Research Trainee

- Developed genomic analysis scripts to study mutational patterns in cancer
- Built an efficient pipeline for identifying significant variants in large-scale genomic data
- Leveraged advanced computational tools to visualize and quantify tumor progression
- Contributed as co-author in lab's manuscript for journal submission

TEACHING & MENTORING

AUG 2023-
present

Teaching Assistant

Genetics (BIO 325), The University of Texas at Austin

- Designed lesson plans and led weekly discussion sessions for 30+ students
- Offered personalized assistance to students during office hours and exam review sessions
- Managed course-related responsibilities, including grading and attending lectures

AUG 2023-
DEC 2023

Teaching Assistant

Neural Systems III: Quantitative Tools (NEU 340), The University of Texas at Austin

- Provided tailored support for students learning coding for scientific research purposes
- Effectively managed administrative tasks alongside a substantial grading workload

APR 2022-
AUG 2023

International Orientation Advisor

International Student and Scholar Services, The University of Texas at Austin

- Served as a mentor and student panelist at the orientation for incoming international students
- Delivered engaging virtual information sessions, presenting insights on student life and answering questions from a 300+ audience

JUL 2019-
SEP 2020

Private Tutor

Self-Employed

- Tutored 2 students in High School Mathematics, including Algebra, Calculus, and Statistics

JUN 2019-
DEC 2019

Academic Instructor

Patrick Language Institute

- Provided individualized instruction to 50+ students preparing for the Test of English as a Foreign Language (TOEFL)

WORK EXPERIENCE

AUG 2021-
DEC 2022

Customer Service Associate

International Student and Scholar Services, The University of Texas at Austin

- Managed and addressed inquiries from prospective and current international students
- Implemented proactive approaches to resolve complex immigration-related issues for students
- Provided administrative support to 30+ office personnel, ensuring efficient workflow

FEB 2021-
MAY 2021

Content Editor

CJ E&M Entertainment Div., International Business Department

- Edited 100+ video clips of television programs and published with designed thumbnails
- Leveraged data mining tools to track consumer engagement and analyzed user data to drive strategic decisions
- Collaborated to develop marketing tactics, resulting in a significant boost in viewership

PROJECTS

JAN 2023-present	Investigating the Efficacy of the Cascade Model of Synaptic Plasticity in a Biologically Constrained Simulation
JUN 2023-AUG 2023	Structural Disruptions of 3D Genomic Architecture in Human Brain Tumors <ul style="list-style-type: none"> Utilized computational tools to analyze brain tumor sequencing data and investigate the effects of structural alterations on 3D chromatin conformation Generated and investigated a hypothesis on whether cancer genes linked to structural disruptions exhibit altered expression levels Applied dimensionality reduction, hierarchical clustering, and diverse statistical techniques to effectively address the research question
FEB 2023-APR 2023	Investigating Cell Differentiation in the Brain with a Computational Model of Delta-Notch Signaling and Dynamical System Analysis <ul style="list-style-type: none"> Conducted extensive literature review on Delta-Notch signaling and cell differentiation to inform the development of the computational model Developed a Python-based simulation model that utilizes differential equations and mathematical functions to visualize and analyze the neural development process over time Designed an algorithm inspired by the random walk process to generate an agent-based cell network that simulates the interactions between neighboring embryonic stem cells in the brain Utilized the ligand-receptor binding mechanism and other biological processes to create a mathematical model that accurately simulates the Delta-Notch signaling system
FEB 2023-MAR 2023	Comparative Analysis of Single Nucleotide Polymorphism (SNP) Genomic Data in Patients with Anxiety Disorder (AD) and Major Depressive Disorder (MDD) <ul style="list-style-type: none"> Acquired genomic data from publicly available sources and curated the datasets for analysis Conducted exploratory data analysis using dplyr and tidyr packages in R Analyzed differences in single nucleotide mutation profiles between patients with AD and MDD Created visualizations with ggplot to answer research questions
NOV 2022-DEC 2022	Simulation Analysis of Neuron Firing Activity in Cerebellar Cells for Learning and Extinction Evaluation <ul style="list-style-type: none"> Performed in-depth analysis of neuron firing activity to investigate learning and extinction rates in classical conditioning trials Employed statistical analysis techniques to confirm the accuracy and reliability of the outcomes Delivered a presentation on results to classmates and lab members
MAY 2022-JULY 2022	Computational Investigation of Single Nucleotide Driver Mutations and Tumor Evolution Using Chromatin Conformation Data <ul style="list-style-type: none"> Leveraged 3D genome sequencing techniques to gain novel insights into the evolution and underlying drivers of tumors Conducted mutational signature analysis to understand the mechanisms of tumor development Utilized public genomic databases to accurately detect and compare mutations in tumor samples

PRESENTATIONS

SEP 2023	Fall Undergraduate Research Symposium, The University of Texas at Austin
AUG 2023	Summer Research Program Poster Competition, MD Anderson Cancer Center <ul style="list-style-type: none"> Winner of the 2023 Poster Competition
APR 2023	College of Natural Sciences Undergraduate Research Forum, The University of Texas at Austin
APR 2023	Longhorn Research Poster Session, The University of Texas at Austin

HONORS & AWARDS

University Honors, The University of Texas at Austin
Fall 2021, Spring 2022, Fall 2022, Spring 2023

Dean's Honor List, College of Liberal Arts, The University of Texas at Austin
Fall 2022 (Summa Cum Laude), Spring 2023 (Summa Cum Laude)

SEP 2023	Central Texas Mensa Scholarship, Mensa Education & Research Foundation
JUN 2023	Government Department Scholarship, College of Liberal Arts, The University of Texas at Austin
JUN 2023	Mensa Foundation Scholarship, Mensa Education & Research Foundation
MAY 2023	CPRIT Research Training Award, Cancer Prevention & Research Institute of Texas (CPRIT)
MAY 2023	International Education Fee (IEF) Scholarship, The University of Texas at Austin
APR 2023	Second Year Excellence Award, College of Natural Sciences, The University of Texas at Austin
APR 2023	College Scholar, University Honors Day, The University of Texas at Austin
MAY 2022	International Education Fee (IEF) Scholarship, The University of Texas at Austin
MAR 2022	Research or Conference Travel Scholarship, The University of Texas at Austin
JAN 2022	Alpha Lambda Delta Honor Society, The University of Texas at Austin