

ELLIE KIM

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EDUCATION

AUG 2021-
MAY 2025 **The University of Texas at Austin**
B.S. in Neuroscience | B.A. in Government

- Certificate in Scientific Computation and Data Sciences
- Certificate in Elements of Computing
- Certificate in Computational Science and Engineering
- Minor in Philosophy of Law
- GPA 3.95

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

Student Organizations: Synapse, Machine Learning and Data Science (MLDS), Society for Advancing Gender Equity in STEM (SAGES), Hispanic Association of Computer Scientists (HACS)

SKILLS

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

Technical Skills: data analysis, data visualization, genome analysis, certified MRI Level 1 user

Languages: Fluent in Korean

RESEARCH EXPERIENCE

OCT 2022-
present **Department of Neuroscience at The University of Texas at Austin**
Research Assistant, Advisor: Michael D. Mauk

- 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

AUG 2022-
OCT 2022 **Dell Medical School at The University of Texas at Austin**
Research Assistant, Advisor: Joseph E. Dunsmoor

- 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 **Department of Psychology at The University of Texas at Austin**
Research Assistant, Advisor: Alissa Mrazek

- 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 **Department of Neurosurgery at MD Anderson Cancer Center**
Research Trainee, Advisor: Kadir C. Akdemir

- 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

WORK EXPERIENCE

- AUG 2023-present** **Teaching Assistant**
Genetics (BIO 325), The University of Texas at Austin
- APR 2022-FEB 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
- 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** **Video 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
- JUL 2019-SEP 2020** **Private Tutor**
High School Mathematics
- 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 TOEFL, enhancing their English proficiency and overall test-taking skills

PROJECTS

- FEB 2023-APR 2023** **Investigating Cell Differentiation in the Brain with a Computational Model of Delta-Notch Signaling and Dynamical System Analysis**
Computational Simulation, Python, Object-Oriented Programming
- 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)**
Data Science, R, Genome Analysis, Data Visualization
- 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 SNP profiles between patients with AD and MDD
 - Created visualizations with ggplot to answer research questions

NOV 2022- DEC 2022	Computational Simulation Analysis of Neuron Firing Activity in Cerebellar Cells for Learning and Extinction Evaluation <i>Data Science, Bash, Python, Data Visualization</i> <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
OCT 2022- DEC 2022	Effects of UV Radiation on Cancer Incidence Rate <i>Statistics, Data Analysis, R</i> <ul style="list-style-type: none"> Conducted an analysis on the impact of UV radiation on cancer incidence rates Utilized various statistical techniques, including regression analysis and hypothesis tests
MAY 2022- JULY 2022	Computational Investigation of Single Nucleotide Driver Mutations and Tumor Evolution Using Chromatin Conformation Data <i>Genome Analysis, Bash, Python, Data Visualization</i> <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 Employed public database of Cancer Gene Census (CGC) oncogenes to accurately detect and compare mutations in tumor samples
MAY 2022	Crime Map of UT Austin Campus and Surrounding Areas <i>Data Visualization, Python, Bash</i> <ul style="list-style-type: none"> Conducted a data visualization project to provide insight into the safety of various locations around campus Analyzed approximately 2 million police incident reports with Python and Bash script
MAR 2018- MAY 2018	Twitter Data Mining <i>Text Mining, RapidMiner</i> <ul style="list-style-type: none"> Experimented with data mining to scrape >5k Tweets for analyzing public opinion on government policy over tourism Presented research findings to an audience of 100+ students and faculty members
DEC 2017- NOV 2018	Statistics Database Website for High School Students <i>Data Collection, Data Visualization, Website Design</i> <ul style="list-style-type: none"> Launched an open data portal to empower students to conduct research using public data Transformed raw data to an accessible insights using analytics tools such as RapidMiner

POSTER PRESENTATIONS

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

APR 2023	College Scholar, University Honors Day, The University of Texas at Austin
JAN 2023	Summa Cum Laude in the Dean's Honor List, College of Liberal Arts, The University of Texas at Austin
DEC 2022	Fall 2022 University Honors, The University of Texas at Austin
MAY 2022	Spring 2022 University Honors, 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
DEC 2021	Fall 2021 University Honors, The University of Texas at Austin