

Logan Kronforst

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Objective

Logan has extensive expertise in advanced applied mathematics and programming abstractions. Currently, he is completing the core computer science curriculum at Stanford University's Department of Computer Science and Engineering as a non-degree student. As a teaching assistant at UT Austin's Department of Computer Science, Logan has gained a strong command of machine learning algorithms and their mathematical foundations. Through rigorous coursework and professional experience, he has developed the skills to build sophisticated software, machine learning systems, data science solutions, and numerical applications that harness both pure and applied mathematics, supported by a scientific intuition honed through years of research at a significant and prestigious research University.

Education

Stanford University, Foundations in Computer Science Graduate Certificate June 2025 – present

- **Department of Engineering and Computer Science**
- Stanford computer science core curriculum
- transcriptable, for-credit, graduate courses.
- Courses taken with Stanford undergraduates and graduates. There is no distinction between in-person and online courses, unlike other online CS programs. Students complete the same assignments, exams, and finals as Stanford-enrolled students.
- **Coursework:** Programming Abstractions, Discrete Math, Computer Organization and Systems (future), Design and Analysis of Algorithms (future)

University of Texas at Austin, Programming and Computation Certificate August 2021 – May 2025

- GPA: 3.8/4.0
- **Department of Computer Science**
- emphasis is programming abstractions, data structures and algorithms, machine learning, and numerical methods.
- **Coursework:** Intro to Programming, Data Structures and Algorithms, Data Visualization, Scientific Computation, Machine Learning, Data Science

University of Texas at Austin, Scientific Computation and Data Science Certificate August 2021 – May 2025

- **Department of Statistics and Data Science** GPA: 3.5/4.0
- Rigorous technical emphasis on inductions and applications between applied/pure mathematics and complex computer systems involving machine learning and canonical data structures.
- **Coursework:** Elementary Statistical Methods, Multivariate Engineering Calculus, Multivariate Probability, Linear Algebra, Faculty Supervised Research

University of Texas at Austin, BA in Music, Classical Guitar Performance August 2021 – May 2025

- GPA: 3.4/4.0
- Sarah and Ernest Butler School of Music
- Graduate of a world-class, classical guitar program. Had many important performance and concert engagements within the community and at the Butler School of Music.
- transitioned from music to computer science to expand my career and life trajectory, while still actively performing and studying music.
- **Coursework:** 18th Century Counterpoint, Performance and Analysis, Chamber Music, Teaching and Learning in Music, Musicians' Health

Experience

Data Science Intern, the University of Texas at Austin – Department of Psychology, Behavior Data Science Initiative May 2023 – September 2023

- Developed TensorFlow machine learning models using data collected from research participants' smartphones.
- Lead author on professional research publication in collaboration with engineers, psychologists, and data scientists.
- Publication submitted to professional conference technology interest group
- Thoroughly tested machine learning model for statistical and numerical reliability, under varying circumstances.

Teaching Assistant, the University of Texas at Austin – Department of Computer Science, Data Analytics and Machine Learning May 2025 – August 2025

- Supervised by Dr. Kia Teymourian
- topics in data science, statistics, and machine learning
- hypothesis testing, probability distributions, random variables, normal distributions.
- taught classification (logistic regression, KNN, naive Bayes, decision tree, SVM), clustering (DBSCAN, K-means), regression (GLM, least-squares) models, and optimization techniques (gradient-descent, PCA, quasi-newton's method).
- implemented multiple machine learning algorithms from scratch.

Teaching Assistant, the University of Texas at Austin – Department of Computer Science, Big Data Analytics May 2025 – August 2025

- R programming, data wrangling with dplyr, visualization using ggplot.
- SQL style relational database manipulation techniques
- Normal distributions, probability density curves, simple hypothesis testing.
- statistical inference and data science

Publications

Mood Prediction Using Adaptive Multi-Task Deep Learning June 2023

Logan Kronforst, Dr. Jacqueline Duong, Dr. Kexin Feng, Dr. Adela Timmons, Dr. Theodora Chaspari
Poster abstract accepted to the 57th Annual Association for Behavioral and Cognitive Therapies Convention (ABCT), Seattle, WA

RNN Music Generation May 2025

Logan Kronforst, Dr. Shyamal Mitra, Dr. Gustavo Cepparo

Formal research paper requirement accepted by the Department of Statistics and Data Science, in preparation for professional publication. The University of Texas at Austin.

Project Experience

Scientific Computation Applications github.com/logankronforst

- Closed-form mathematical proof and solutions of various machine learning methods
- Provided numerical implementations using strictly NumPy, and no standard machine learning libraries.

RNN Music-Generation github.com/logankronforst

- Generating music using RNNs
- Trained an LSTM deep learning model on the music of J.S. Bach to generate probabilistic note predictions.
- Formal mathematical derivation of RNN, as a dynamical system of partial differential equations.
- Tools Used: Python, Jupyter Notebooks, NumPy, TensorFlow

C++ Programming Abstractions

- Various advanced projects in C++ completed for Stanford's CS 106B, programming abstractions.
- Projects in recursion, abstract data types, collections, and backtracking.

Technologies

Programming Languages: C++, Python, R

Technologies: TensorFlow, NumPy, Scikit-learn, SciPy, Jupyter Notebooks, QT Creator, SQL