

## PERSONAL STATEMENT

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Highly motivated Computer Science and Mathematics student with a passion for machine learning research, software development, and striving for education in applied technology. Enthusiastic to learn new skills and apply experience in software engineering and machine learning.

## EDUCATION

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**University of North Carolina at Chapel Hill** – Chapel Hill, NC

Aug 2021-May 2023

Bachelor of Science, **Computer Science**

Bachelor of Arts, **Mathematics**

- Excel@Carolina Accelerated Research Scholar
- 3.862 GPA w/ Dean's List

**Panther Creek High School** – Cary, NC

Aug 2017-June 2021

High School Diploma, Summa Cum Laude

- President and Founder of Data Science Club
- Elected President of Cyber-Defense Club
- College Dual Enrollment Student with 75+ College Credit Hours
- 4.7024 GPA – Rank 2/784

## EXPERIENCE

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**Baby Brain Mapping Lab, UNC School of Medicine** – Chapel Hill, NC

July 2021-Present

**Undergraduate Student Researcher**

- Trained Deep Learning solutions with **1100+** UNC Hospital patient scans
- Implemented Generative Adversarial Networks with **PyTorch**
- Applied **algorithms and data structures** for efficient data processing in Python

**Critical Error Robotics** – Morrisville, NC

2018-2021

*Competitive High School Robotics Team*

**Lead Programmer**

- Utilized **object-oriented programming** in C++
- Met strict efficiency requirements for accurate real time control
- Applied PID control and Odometry for error correction
- Led team to **21** awards including the Vex World Championship Amaze Award.

## CERTIFICATIONS AND AWARDS

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- DeepLearning.AI TensorFlow Developer – *DeepLearning.AI*
- Generative Adversarial Networks Specialization – *DeepLearning.AI*
- How Google does Machine Learning Course – *Google Cloud*
- ACT WorkKeys NCRC Platinum – *ACT*
- Cybersecurity Finalist – *Technology Student Association National Conference*
- Software Development 1<sup>st</sup> Place – *NC Technology Student Association State Conference*
- RTP High School Programming Competition 2<sup>nd</sup> Place – *RTP HS-PC 2018*
- Best Business Potential Software – *Flare Hacks 2020*

## SKILLS AND INTERESTS

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Python, Java, Object Oriented Programming, Data Structures and Analysis, Algorithms, Machine Learning, Deep Learning, Tensorflow, PyTorch, SQL, Google Cloud Platform, Applied Mathematics, Linux

## MACHINE LEARNING PROJECTS

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- **BrainScanGAN (Work in progress):** A **Generative Adversarial Network** for generating high fidelity and unique T1w & T2w brain scans. Implements Wasserstein Loss with Gradient Penalty, Multi-Channel 3D Tranpose Convolutions for scan generation, and 3D Convolutions for image discrimination.
- **WebCred:** Utilizes **Recurrent Neural Network** with Bidirectional LSTMs to classify job listings data as fraudulent. Integrated into Flask Application with Python and trained with kaggle dataset.
- **MaskOn:** Applies Convolutional Neural Networks for live face mask detection. Image Augmentation and Monte Carlo Dropout were used to add versatility in varying scenarios. Packaged as windows application with OpenCV for video stream. Prepared Post-Training Quantized TF Lite model for mobile device deployment.
- **No Test No Problem:** Powered by **Convolutional Neural Network** to detect Covid-19 through patient CT Scans. Training uses Image Augmentation and Monte Carlo Dropout on the google cloud platform. K-Folds Cross-Validation was used to mitigate issues with the limited dataset from kaggle. Award-winning on DevPost.
- **WeatherOrNot:** Uses a **Deep Neural Network** to generate probabilities of specific health risks given patient and local data. The model concatenates multiple deep neural networks to isolate gradients and separate independent features. SQL, Django, and weather APIs were used to gather data and offer asynchronous risk analysis.
- **Football Data Analysis and Simulator:** A **Deep Neural Network** is used to predict the anticipated demand of a particular roster of players (For Covid-19 risk assessment). Emphasis on data wrangling, cleaning, and visualization. TF model concatenation is used to isolate the gradients of the player statistics between the teams and offers and prevent over-fitting. Trained with publically available college football data from the last 10 years.

## RELEVANT COURSES

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| • Multivariable Calculus (MATH-233)                   | Grade: A       |
| • Linear Algebra for Applications (MATH-347)          | Grade: A       |
| • Differential Equations (MATH-383)                   | Grade: A       |
| • Discrete Mathematics (MATH-381)                     | Grade: A       |
| • Introduction to Probability (STOR-435)              | Grade: A-      |
| • Data Structures and Analysis (COMP-210)             | By Examination |
| • Advanced Calculus I (MATH-521)                      | In Progress    |
| • System Fundamentals (COMP-211)                      | In Progress    |
| • Foundations of Programming (COMP-301)               | In Progress    |
| • Models of Languages and Computation (COMP-455)      | In Progress    |
| • Programming Intelligent Physical Systems (COMP-590) | In Progress    |