Gabriel Mongaras

gmongaras@smu.edu • linkedin.com/in/gmongaras
gabriel@mongaras.com • https://gabrielm.cc/
512 - 659 - 5405 • 4003 Sendero Springs Dr, Round Rock, TX 78681

OBJECTIVE: Enthusiastic artificial intelligence engineering student seeking to do research in the AI industry and becoming a professor, teaching advancements in AI.

EDUCATION:

Southern Methodist University – Lyle School of Engineering — Dallas, TX
Masters of Science in Computer Science — Expected Grad Date: May 2025
Bachelor of Science in Statistical Science — GPA: 3.88
Bachelor of Science in Data Science
Minor in Mathematics

Austin Community College — Dallas, TX
Associates of Science in Computer Programming — Grad Date: May 2021
Occupational Skills Award – Computer Programming — GPA: 3.9

DeepLearning.AI GANs Specialization Certificate
DeepLearning.AI Deep Learning Specialization Certificate
Google IT Automation with Python Specialization Certificate
Google Data Analytics Certificate Google Project Management Certificate

RELEVANT COURSES: Graduate Artificial Intelligence, Applied Machine Learning, Data Structures, Algorithms, Assembly Programming, Calculus I, II & III, OS and System Software, Digital Logic Design, Linear Algebra, Digital History, Discrete Computational Structures, Applied Statistics, Harvard CS50 AI: Intro to AI with Python, Engineering Design

SKILLS:

Coding: Python, Django, Flask, C, C++, HTML, CSS, JavaScript, SQL, PL/SQL, AWS, Linux, Arduino, ARM, Android SDK, Java

AI: Neural Networks, PyTorch, scikit-learn, NumPy, CNNs, Transformers, GANs, NEAT, PPO, Object Detection, TensorFlow

Blockchain: Smart Contracts, Solidity, Remix IDE

EXPERIENCE:

Southern Methodist University., *Undergraduate Research Assistant***,** Dallas, TX — Fall 2021-Present

- Using a neural network, we are predicting the final energy of noncovalent interactions between molecules
- I have been in charge of making a new network that predicts the MP3 energy given both the state of molecules along with the structure of molecules and improving that model to make it give better predictions.
- I am combining the old model along with the new model I created to see if the data outputted from one can be the input into the other model. This way, we can truly see how each of the models performs to get a true understanding of how to improve the models.

Meta, *Intern***,** Menlo Park, CA — May 2022-August 2022

- Created a working mobile app using the Android SDK for a project assigned by Meta University.
- Researched and created an AI model to generate random sentences from Gaussian noise to display on the app.
- Worked with team members to implement rules and strategies to deal with security on data and database applications.

ACTIVITIES:
Artificial Intelligence Club, Member
Cybersecurity Club, Member
Computer Science Club, Member
Commons Council, Member

AWARDS:
Hunt Scholars
Rotunda Scholars
University Honor Role
Hilltop Scholars
Discovery Scholar
Accelerated Pathways Masters Degree Program

ENGINEERING PROJECTS:

MetaU Capstone Summer 2022

- Created an app that gave daily fortunes to users which can be shared with friends found on the app.
- Added privacy features.
- Added dark mode.
- Added localization for 40+ countries.
- Built a model using a Transformer WGAN to generate random fortunes from Gaussian noise.
- https://github.com/gmongaras/MetaU_Capstone
- https://github.com/gmongaras/PyTorch_TextGen

YOLOX From Scratch Spring 2022/Summer 2022

- Coded an AI from scratch that learns how to detect objects given an image by putting bounding boxes around objects in the image.
- To detect objects, the algorithm predicts three attributes: The location of a bounding box to put around an object, how confident the model is that there's an object in that bounding box, and what object is in that bounding box.
- The algorithm is one of the many from the YOLO series which has proved to be one of the best for object detection.
- The project can be found here: https://github.com/gmongaras/YOLOX_From_Scratch
- Additionally, I wrote an article series explaining all the parts to this algorithm: https://gmongaras.medium.com/list/yolox-explantation-1bff11aa9911

Transformers From Scratch Fall 2021/Spring 2022

- Coded an AI from scratch that learns how to translate from English to Spanish
- The algorithm used is based on the **transformer model** which comes from Google's paper "Attention is all you need"
- The project can be found here: https://github.com/gmongaras/Transformers_From_Scratch

Visualizing Gradient Descent Summer/Fall 2021

- Using only NumPy in Python, a neural network with forward and backward methods classifies a given point (x1, x2) to a color of red or blue based on the training data
- The network is trained using gradient descent which I coded from scratch with basic NumPy operations
- The model created represents how other models in the real world learn as they use the same algorithm
- The project can be found here: https://github.com/gmongaras/Visualizing_Gradient_Descent_For_BCE_Loss

ARTICLES:

Integrating Custom PyTorch Models Into an Android App:

- Explains how one can integrate a pretrained PyTorch model into an Android App.
- This article has been published by MLearning.ai
- https://medium.com/mlearning-ai/integrating-custom-pytorch-models-into-an-android-app-a2cdfce14fe8

YOLOX Explanation Series:

- Explains how the YOLOX object detection algorithm works through 4 different articles
- These article have been published by MLearning.ai
- https://gmongaras.medium.com/list/yolox-explantation-1bff11aa9911

Community Detection With Neural Networks:

- Explains how neural networks can be used to detect communities in a graph and how this algorithm performs against the Girvan Newman algorithm.
- https://medium.com/smucs/community-detection-with-neural-networks-2e6c79a28d0c

Coding A Neural Network From Scratch:

- An article that walks through how to code a neural network from scratch using NumPy
- https://gmongaras.medium.com/coding-a-neural-network-from-scratch-f9fe5632e9f3

How Do Neural Networks Work?

- An article explaining how a neural network works and the math behind it.
- https://gmongaras.medium.com/how-do-neural-networks-work-bfdd3ca6c23a