Dean C. Gumas

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- *Innovative engineer with expertise in AI/ML, robotics, mathematics and data-driven solutions*
- *Strong leadership and communication skills with demonstrated success in industry*
- *M.S. Computer Science - Machine Learning - University of Southern California (In Progress)*
- *Summa Cum Laude - Virginia Tech College of Engineering*
- *B.S. Computer Engineering - Machine Learning - 3.87 GPA*

Computer Skills & Abilities

· Python, PyTorch, Tensorflow, Keras, Pandas, Scipy, Numpy
· C/C++/C#, Java, Ruby on Rails, NodeJS, Javascript, jQuery, SQL, HTML, Matlab

Education

University of Southern California | Master of Science in Computer Science

· Focus in Machine Learning - 4.0 GPA to date with expected graduation Winter 2025
· Machine Learning (PyTorch), Applied Natural Language Processing (PyTorch), Robotics (Python), Geospatial Information Systems, Analysis of Algorithms
· Hands-on experience building and training deep neural networks, using convolutional, recurrent and transformer based models for prediction, data analysis and natural language processing
· Developed RNN + transformer based machine learning models in PyTorch to predict premier league player performance, trained using multiple years of player scoring data preprocessed with Pandas.
· Outperformed 2022 Stanford paper on reference dataset. Paper and deployment preview are available on my website and github: https://github.com/DeanGumas/ml-premier-predictor

Virginia Tech College of Engineering 2020 | Bachelor of Science in Computer Engineering

· Major: Machine Learning - Overall GPA 3.87
· Artificial Intelligence (Python), Machine Learning (Julia), Embedded System Design (C)
· Complex Analysis, Advanced Calculus, Discrete Math, Differential Equations, Linear Algebra
· Undergraduate Research Assistant for two professors of engineering
· CanSat design team member, creating satellite payloads for a NASA sponsored global competition

Professional Experience

Senior Associate Software Engineer | L3Harris | October 2020 - Present

· Lead developer of Android Team Awareness Kit (ATAK) applications, enabling over-the-horizon communication via L3Harris satellite radios.
· Led integration of L3Harris ATAK apps with government customer systems, principally BATDOK, a mobile medical package for collecting vital patient data for transfer via satellite to U.S. Air Force medical command hubs.
· Led on-site demos during military exercises across the U.S. and Pacific rim, ranging from Virginia to Alaska and Guam.
· Received a Software Excellence award for customer appreciation, contributions and performance.

· Developed Lighthouse web application enhancements, for management and control of globally deployed devices via satellite communication and IP.
· Created mapping functions to track and manage device positions in real time, with options for sending commands to devices to alter functionality or request data.
· Built complex mission report and media export tools for formatting, displaying and exporting large volumes of device data in consolidated, human readable format.

· Built sophisticated configuration tools for L3Harris satellite radios enabling the user to program complex behaviors onto the devices. Key features include geofencing, beaconing, and data infill.

Software Engineering Intern | L3Harris | June 2017 - September 2019

- Researched, designed and developed an algorithm to detect GPS spoofing based on signal analysis.
- Designed and implemented an algorithm for global positioning based on LEO satellite communication data using gradient descent.
- Developed C code for a low energy microcontroller to manage L3Harris satellite radios. Developed algorithms to reduce radio on-time/energy consumption via prediction of the best satellite, beam and time for transmission using constellation ephemeris (TLE data).
- Developed Python and shell scripts to empirically determine communication beam mappings for the Iridium NEXT satellites. Developed methods to process large volumes (~1TB) of satellite data to achieve reliable estimates.

Research Experience

Undergraduate Research Assistant | Virginia Tech | September 2019 – May 2020

- Research assistant to Prof. L'Afflitto in the Advanced Control Systems Lab, working on robot control algorithms/projects.
- Created mapping and ellipsoid algorithms for drone navigation through crowded and hostile environments taking input from an Intel RealSense camera.
- Developed motor control algorithms for a 5-dof robotic arm designed to lift objects of various masses while attached to a quadcopter drone.

Undergraduate Research Assistant | Virginia Tech | September 2017 - December 2017

- Research assistant to Prof. Hsiao on his project GameChangineer, a website designed to create video games from a "game plan" written in plain English. Targeted at helping kids (5-7th grade) get excited about programming while learning the fundamentals of problem solving and design.
- Worked on website and UI design, playtesting, and creating lesson plans for younger kids learning to use the technology. Available to try here https://gc.ece.vt.edu/

Awards and Acknowledgements

- L3Harris Software Excellence Award (2023)
- Pratt Engineering Scholarship (2017)
- 3rd Place overall at VT Hacks programming competition/hackathon (2017)
- Dean's List with Distinction (2016-19)

Game Design and Development

Gravity Labs

- 2D platformer with directional gravity flipping mechanic. Available to play on my website https://deangumas.github.io/
- Written in Javascript.

VR Driving Simulator

- Driving simulation game built for Oculus Rift VR platform. Uses Mapbox SDK to create maps representing real world areas such as New York City or user created environments.
- Written in C# using Unity.

Find Home

- Open world 3D exploration game with platforming and puzzle challenges required to unlock new areas. All models, environments and animations were personally created.
- Written in C++ using Unreal Engine 4.