Kevin Lizarazu-Ampuero

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Education

Bachelor of Science — **Virginia Tech** — Blacksburg, VA — **07/2019 - 05/2023**

- **Major** in Computer Engineering, **Minor** in Organizational Leadership
- **Relevant Coursework:** Machine Learning, Software Systems, Computer Systems, Data Structures & Algorithms, Large Scale Software Design, Statistics, Computer Architecture, Computer Vision, Artificial Intelligence, Computer Networking

Skills

- **Languages:** Python, C, C++, C#, Java, MATLAB, SQL, Bash, R, LaTeX, HTML, CSS
- **Packages:** NumPy, SciPy, Matplotlib, Tkinter, RayLib, Pandas, OpenCV, AIGym, SciKit-Learn, RegEx
- **Development:** Qt, Docker, Git, Tensorflow, PyTorch, Linux, Anaconda, GDB, Valgrind, Kaggle, Unity, Unreal Engine

Experience

MITRE Workforce Development Program — **Virginia Tech** — *Blacksburg, VA* — **08/2021 - 05/2023**

- Led research on multi-agent reinforcement learning systems for maritime remote sensing applications using Python
- Optimized training times by reducing processing by 20% via CUDA parallel processing and enhanced reward functions
- Analyzed training data using TensorFlow, Numpy, and Gym within the Ubuntu environment tracking reward metrics
- Collaborated with cross-functional teams to utilize machine learning, artificial intelligence, and Unreal Engine to design and deliver 2D and 3D simulation testbeds showcased at the 2023 SciTech Forum

Software Engineer, Intern — **MITRE** — *McLean, VA* — **05/2022 - 08/2022**

- Played a pivotal role in developing a gold standard for red teaming AI systems, finding and mitigating vulnerabilities
- Directed and coordinated a team of interns, orchestrating the creation and validation of PyTorch object detectors autonomously through a combination of Python, Bash, Cloud Computing, and injection of adversarial patches in our tests
- Improved performance of detections by 18% using the MMDetection framework trained on 330k COCO images
- Drove the creation of synthetic data using Unreal Engine with JSON manipulation increasing training and test fidelity
- Successfully applied Python's Adversarial Robustness Toolbox (ART) to lower detections by 31% in the synthetic world

RockSat-X, Sensors Lead — **Virginia Tech** — *Blacksburg, VA* — **10/2020 - 08/2022**

- Developed a robust event loop in C to manage sensor data stored in binary and facilitate I2C and SPI with STM32
- Converted functional C++ libraries into C, making it compatible with the Raspberry Pi Zero's limited resources
- Spearheaded the Tetra star tracker algorithm to determine the payload's position in space via star triangulation in O(1)

Projects

Augmented Reality Transit — *GDMS Senior Design Project* — **08/2022 - 05/2023**

- Unity-based AR app that visualizes 3D paths from Google Maps API and uses YOLOv5 for hazard detection on HoloLens

Fake News Detection — *Machine Learning Project* — **01/2023 - 05/2023**

- Trained Naive Bayes [57%], Support Vector Machine [87%], and ChatGPT models on a 45k article dataset (real and fake) from Kaggle, prepared using a bag-of-words approach with a 90/10 split on Python using Pandas dataframe

DermaCheckAI — *Large Scale Software Design Project* — **08/2022 - 01/2023**

- Trained a YOLOv5 model on 12k images of benign [92% accurate] and malignant [98% accurate] samples to give diagnosis
- Applied C++ design patterns, Python for REST API calls, and SQL for customer data storage all in agile schedule

Organizations

Society of Hispanic Professional Engineers — *SEC Representative* — **05/2022 - 05/2023**

A. James Clark Scholars Program — *Exclusive Cohort Member* — **06/2019 - 05/2023**

Additionally: Google Latin Student Leadership Summit, ColorStack, Dean's List, VT Global Education Office, Codepath, Research