Rajiv Sarvepalli

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Education

University of Virginia

Bachelor of Science in Computer Science GPA: 3.921/4.0 Major GPA: 3.976/4.0

RESEARCH EXPERIENCE

Undergraduate Research Assistant

University of Virginia

- Designed tool to analyze Docker containers on Docker Hub collecting data for security analysis.
- Built an Active Directory corporate environment through PowerShell and ESXi scripting for modeling user behavior.
- Assembled information about how attacks are executed by running red-team emulators collecting usable data.
- Preprocessed data with Python data science libraries to prepare for anomaly detection and classification tasks.

Research Assistant

George Mason University

- Analyzed and organized data from IoT devices to increase accuracy of current models by 5% leveraging python machine learning libraries.
- Implemented time series motif discovery algorithms in Python using NumPy and SciPy.
- Created one of the first implementations of a novel matrix profile algorithm in Python from a publication.

Relevant Work Experience

Machine Learning Intern

Expedition Technology

- Researched, assessed, and adapted state of the art object detectors using PyTorch to detect small objects supporting an Agile team.
- Deployed Docker containers to AWS P2 instances through Jenkins to train neural networks.
- Constructed TensorBoard live feeds to monitor validation losses and observe qualitative results quickening the model evaluation process.
- Performed exploration of reinforcement learning libraries to find the best library with priorities of concision and readability.
- Researched simulation parameterization techniques for few-shot object detection.

Data Analyst Intern

NetForecast

- Developed and documented data management and data collection software to improve the structure and optimization (~5000 lines of code).
- Designed scheduled tasks using AWS cloud instances to perform constant data updates improving data quality.
- Analyzed data from traceroutes and pings to predict router locations using support vector regression and force simulations.
- Modernized software development to follow object oriented programming principles and design patterns.

PUBLICATIONS AND CONFERENCES

TECHCON | Conference

- Presented research work from University of Virginia.
- Illustrated the manner in which benign user's accounts are taken advantage of and framed for malicious attacks.
- Assessed collected data to speculate about ways to discern between benign and abnormal user behavior.
- Proposed using anomaly detection with clustering to differentiate malignant users from benign users.

${\bf Defense \ Against \ Persona \ Abuse \ Attacks \ | \ Poster \ Publication}$

- Explained modeling of a mock corporate environment and user emulators.
- Links: https://www.src.org/library/publication/p097600/or https://rajivsarvepalli.github.io/assets/pdf/src/P097600.pdf.

Charlottesville, VA Aug. 2018 – May 2021

Jan. 2019 - May 2021

June 2017 - Sep. 2017

Fairfax, VA

Herndon, VA

Charlottesville, VA

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May 2020 - Aug. 2020

Nov. 2019 - July 2021

Remote

Sep. 2019

Sep. 2019

TEACHING EXPERIENCE

Undergraduate Teaching Assistant Aug. 2020 - Dec. 2020 University of Virginia Charlottesville, VA • Provided weekly office hours for a Computer Architecture class with more than 300 students. • Ran weekly laboratory sessions providing an overview and answering student's questions. • Examined instructional material for understandability and clarity through reviewing assignments' overview and instructions. Honors and Awards Member of JUMP Undergraduate Research Initiative Jan. 2019 - May 2021 • Paid applicant-based year-long structured research program for undergraduate students. • More information: https://engineering.virginia.edu/jump-undergraduate-research-initiative. Intermediate Honors Nov. 2020 • Top 20% of students in Engineering Department after first 4 semesters. Fall 2018, Spring 2019, Fall 2019 Dean's List • Earned 3.5 GPA while maintaining 15+ credits.

Relevant Coursework

Graduate Machine Learning Machine Learning Natural Language Processing Computer Vision and Language Statistical Learning and Graphical Models From Data to Knowledge Probability

Projects

Mocking SQLAlchemy | Python, SQLAlchemy

- Created a python library for mocking SQLAlchemy that has around 16,000 downloads and 12 GitHub stars.
- Established modern CI/CD pipelines using GitHub Actions.
- Documentation: https://mock-alchemy.readthedocs.io/en/latest/.

Social Media Privacy Tool | Python, PyTorch, Captum

- Used machine learning to examine the potential personal information in a social media post (image & text).
- Leveraged name entity recognition to recognize potential information leaks within a post's text.
- Developed CNN for image geolocation for a small subset of locations achieving high precision and recall.
- Made geolocation into a hierarchical classification problem through hierarchical clustering of GPS coordinates.
- Demo: https://youtu.be/vcs3M8CT884.

Docker Explorer | *Python*

- Scraped Docker Hub for Docker images of web servers that serve similar purposes.
- Compared similar Docker containers to do analysis of popularity and software package version numbers.
- Investigated collected data to determine any residual Common Vulnerabilities and Exposures (CVEs) left by not properly updating software in Docker containers.

Anonymous Social Media Privacy

- Senior year thesis on understanding the constraints of privacy within anonymous social media.
- Explored privacy through a sociotechnical lens: realizing the connection between the technical and social aspects of privacy.
- Examined the impact of technology in changing perspective of privacy: from the individual to the collective.

Technical Skills

Languages: Python, R, Prolog, C, Java, OCaml, LATEX Libraries: PyTorch, TensorFlow, Stable Baselines3, NumPy, SciPy, Pandas, Matplotlib, Scikit-learn Developer Tools: Git, Docker, AWS, VS Code, MySQL, IntelliJ

Sep. 2020 - May 2021

Sep. 2020 - May 2021

Sep. 2020 - May 2021

Nov. 2020 - Current