

Rajiv Sarvepalli

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EDUCATION

University of Virginia

Bachelor of Science in Computer Science

GPA : 3.906/4.0 Major GPA : 3.97/4.0

Charlottesville, VA

Aug. 2018 – May 2021

RESEARCH EXPERIENCE

Undergraduate Research Assistant

University of Virginia

Jan. 2019 - Current

Charlottesville, VA

- Designed tool to analyze docker container 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

June 2017 - Sep. 2017

Fairfax, VA

- 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

May 2020 - Aug. 2020

Herndon, VA

- 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

Nov. 2019 - Current

Remote

- 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

Sep. 2019

- Presented research work from University of Virginia.
- Illustrated the manner in which benign user's accounts are taken advantage 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

Defense Against Persona Abuse Attacks | Poster Publication

Sep. 2019

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

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 assignment's overview and instructions.

HONORS AND AWARDS

Member of JUMP Undergraduate Research Initiative

Jan. 2019 - Current

- 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.

Dean's List

Fall 2018, Spring 2019, Fall 2019

- Earned 3.5 GPA while maintaining 15+ credits.

RELEVANT COURSEWORK

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

PROJECTS

Social Media Privacy Tool | *Python, PyTorch, Captum*

Sep. 2020 - Current

- 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 Scraper | *Python*

Sep. 2020 - Current

- 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.

User Emulator | *Powershell, ESXi, Windows Domain Controller*

Jan. 2019 - May 2019

- Created a set of powershell scripts to imitate basic user behavior in Active Directory.
- Imitated common behavior such as opening shared files and accessing websites.
- Collected data to monitor and understand user behavior as a function of logged information.

Anonymous Social Media Privacy

Sep. 2020 - Current

- 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, L^AT_EX

Libraries: PyTorch, TensorFlow, Stable Baselines3, NumPy, SciPy, Pandas, Matplotlib, Scikit-learn

Developer Tools: Git, Docker, AWS, VS Code, MySQL, IntelliJ