

# Simriti Koul

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## EDUCATION

### George Mason University

*Master of Science in Information Security and Assurance*

Fairfax, VA, USA

Aug 2021 - May 2023

### Vellore Institute of Technology (VIT University)

*Bachelor of Technology in Computer Science and Engineering*

Vellore, Tamil Nadu, India

July 2017 - June 2021

## TECHNICAL SKILLS

**Programming Languages:** Python, JavaScript (Intermediate), C++ , HTML, CSS, R

**Libraries and Tools:** IntelliJ IDEA (Intermediate), VS Code, SQL Developer, Linux, SDLC, Agile Environment tools, AWS (Intermediate), Tableau, SLAs, VMware, Splunk, OpenCV, Anaconda, Jupyter Notebook, Office365, SharePoint, Windows, Wireshark, Autopsy, IaaS, PaaS, SaaS, Microsoft Office, CACS, Yara, Virus Total, MITRE, PyTorch, Sklearn, Pandas, Numpy, OpenCV, Git, Docker

**Database:** MySQL, eDiscovery

## WORK EXPERIENCE

### Software Engineer

Blueicon Inc, VA, USA

May 2024 - Present

- Developed high-quality software applications with a strong emphasis on security from inception through deployment.
- Utilized programming languages such as Python, JavaScript, C++ , or others as required by the project.
- Implemented secure coding practices to prevent common vulnerabilities such as SQL injection, cross-site scripting (XSS), and buffer overflows.
- Integrated security requirements into the software development lifecycle (SDLC) to ensure that security is a fundamental component of all software projects.
- Conducted threat modeling to identify potential security risks and design software that mitigates these risks.
- Performed regular risk assessments to identify vulnerabilities and implement appropriate countermeasures.
- Organized code review sessions to ensure adherence to security standards and identify potential security flaws.
- Developed and executed security test plans, including static and dynamic code analysis, penetration testing, and vulnerability assessments.
- Worked closely with cross-functional teams, including developers, testers, and security professionals, to ensure secure design and implementation of software solutions.
- Provided security guidance and training to development teams to enhance their understanding and application of secure coding practices.
- Stayed current with emerging security trends, threats, and technologies to continuously improve the security posture of software applications.
- Participated in security audits and implemented recommendations to enhance software security.

### Information Systems Auditor

North Carolina Agricultural and Technical State University, NC, USA

Feb 2024 - May 2024

- Conducted detail oriented and comprehensive information system audits utilizing AuditBoard and learning Tableau and Power BI to ensure internal controls were robust and effective, leading to enhanced operational efficiency and compliance with all relevant policies and regulations and presented findings, conclusions, alternatives, and information clearly and concisely.
- Reviewed studies, reports and surveys and provided summary to the department leadership. Also, researched, gathered, and synthesized data including frameworks like NIST, FedRAMP, DFARS, COBIT and ISO 27002:2013; and present it in conclusions and recommendations to the management.
- Participated in the planning, development, implementation, and maintenance of new and existing audit engagements.
- Adminstrated project plans coordinated the collection of input from functional areas and assisted in the execution of related activities.
- Prepared summaries, analysis, reports, charts, instructions, reference materials and memorandums for inclusion in required testing phase.

- Led detailed evaluations and internal control reviews of computer information systems, applying risk management techniques and Agile methodologies, which resulted in the protection of university assets and adherence to applicable laws, safeguarding institutional integrity.
- Performed multifaceted audits, including financial, compliance, and investigative, by leveraging Advanced Excel for data analysis and visualization, significantly improving the university's audit process efficiency and investigative capabilities by interviewing, and working with Audit Liaisons.

## **Mobile Application Developer**

*Resilience Inc, FL, USA*

*Sept 2023 - Feb 2024*

- Developed and optimized the MY SELENA and AIMEE apps using advanced JavaScript and SQL techniques, leading to a 25 percent user engagement boost and 30 percent quicker data access, showcasing Agile development practices, user experience design, and performance analytics, researching and analyzing data, processes, and trends.
- Led cross-functional teams in streamlining project delivery through effective Agile and SDLC methodologies, achieving a 20 percent reduction in development cycles and enhancing team productivity and project management efficiency.
- Pioneered innovative SEL curriculum app features with OpenCV and ETL processes, driving a 40 percent improvement in app functionality and user satisfaction, by employing data analytics, cloud computing solutions with AWS, and mobile UI/UX principles.
- Enhanced backend infrastructure scalability and system reliability using AWS and VMware, resulting in 35 percent decreased downtime and significantly improved app stability and security, leveraging cloud architecture, network administration, and information security practices.

## **Student Research Assistant**

*George Mason University, VA, USA*

*Apr 2022 - May 2023*

- Secured project funding from the National Science Foundation (NSF) for an Eye Tracking Experiment, leveraging expertise in research proposal development to investigate developmental disabilities, achieving a key milestone in academic research and funding acquisition.
- Implemented Python and OpenCV technologies to develop an innovative eye movement tracking program and dashboard, applying advanced computer vision techniques that translated real-time eye movements into actionable research data, significantly enhancing the team's capability to analyze developmental disorders.
- Engineered an interactive visualization tool using Python's OpenCV, which transformed complex eye movement data into an intuitive image slider format, improving data interpretability and stakeholder engagement through cutting-edge data visualization techniques.
- Utilized the Twitter API for data extraction, employing Advanced Excel and Python to review, analyze and categorize tweets as scam or quality content through sophisticated pattern recognition algorithms, demonstrating a high level of proficiency in API integration and data management including data querying, reporting, forecasting, analysis, recovery, reporting and control on over 60,000 tweets including statistical methods and modeling.
- Facilitated effective team communications and knowledge transfer within the research team by documenting code, methodologies, and approaches, ensuring process continuity and alignment on project milestones through excellent organizational and documentation skills.
- Played a key role in acquiring insights on ADHD, Autism, and Neuro-typical Disorder through meticulous data comparison across participant categories, employing custom-developed algorithms and data science techniques, contributing to valuable research findings and outcomes.

## **Software Engineering Intern**

*Netilly Digital LLP, New Delhi, India*

*Jun 2020 - Jul 2020*

- Engineered and deployed an AI-powered Healthcare Chat-Bot, integrating Deep Learning, NLP, and Computer Vision technologies via Google TensorFlow and ML Kit, significantly improving medical report digitization, and enhancing user engagement through intuitive OCR features.
- Optimized the Chat-Bot's conversational abilities using Google TensorFlow's Deep Learning APIs, achieving a marked increase in response accuracy and interaction speed, while addressing data processing bottlenecks and user interaction glitches.
- Developed the Chat-Bot into a highly accessible web application, emphasizing user-friendly design and real-world application, which led to increased user satisfaction and expanded application reach.
- Fostered a collaborative development environment within a multidisciplinary team, solving complex technical challenges, which resulted in enhanced project efficiency and accelerated delivery timelines.
- Conducted thorough quality assurance testing and integrated principled UI/UX design, identifying and resolving potential issues pre-launch, ensuring a seamless user experience, and maximizing user retention.

## PROJECTS

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- **Wordle Web Application Game**, Led the creation of a Wordle Web Application Game using Python, HTML, CSS, and JavaScript, enhancing user engagement by Web Portal management using User Experience Design, SEO best practices including devising responsive layouts like messaging and dynamic game algorithms, and boosted collaboration and efficiency through Git for version control. [GitHub](#)
- **Optimizing Robot Navigation using SARSA and Q-Learning**, Optimized Robot Navigation with SARSA and Q-Learning in Python, achieving path optimization and maximized cumulative rewards, cost benefit analysis, and enhanced learning processes through advanced data structures and TensorFlow for algorithm implementation by determining the root cause, scope and scale of issues.
- **Malware Analysis and Detection Investigation**, Directed a Malware Analysis and Detection Investigation, utilizing static and dynamic analysis, reverse engineering, penetration testing, vulnerability assessments and behavior analysis to uncover threat vectors and improved detection methods using IDA Pro, OllyDbg, and Wireshark.
- **Collision Detection and Prevention System**, Pioneered a Collision Detection and Prevention System, integrating ultrasonic sensors and Arduino programming for real-time response, employing advanced algorithms and hardware integration for enhanced system reliability and user interaction. [GitHub](#)
- **Word Search Using Parallel Programming in Python**, Enhanced word search efficiency using parallel programming in Python, optimizing algorithms for grid traversal, managing concurrent operations, and minimizing overhead for performance optimization and effective resource management. [GitHub](#)
- **Complaint Register Portal**, Spearheaded a Complaint Register Portal development, optimizing UI/UX with HTML, CSS, and JavaScript, ensuring data integrity and security through advanced DBMS and security measures, and implementing rigorous testing methodologies for system robustness. [GitHub](#)
- **Location-Based Help Service**, Pioneered a Location Based Help Service application, integrating frontend and backend modules, utilizing geolocation services for dynamic responses, and prioritizing user security through encryption, with real-time notifications for user engagement. [GitHub](#)
- **IoT Application on Wildlife Surveillance**, Drove IoT Application development for Wildlife Surveillance, mastering wireless communication protocols, hardware architecture, integrating sensors, and applying machine learning algorithms for animal behavior insights, focusing on energy efficiency and cybersecurity. [GitHub](#)
- **Socket Programming**, Executed Socket Programming with proficiency in network protocols and concurrent connections, ensuring application stability and secure data transmission, with a focus on real-world applications and extensive testing for reliability. [GitHub](#)
- **Connecting Devices and Message Communication using TCP/IP**, Established device communication via TCP/IP, employing Python and C++, multi-threading, and efficient data serialization, ensuring data integrity and security through encryption, and enhanced device interaction with comprehensive integration testing. [GitHub](#)
- **Courier Information System**, Oversaw Courier Information System development, from requirements analysis to deployment, designing a robust database schema with MySQL and integrating APIs for improved UX and security, utilizing agile methodology for system optimization. [GitHub](#)

## PUBLICATIONS

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- Simran Koul, Yash Raj, Simriti Koul. '**Analyzing Cyber Trends in Online Financial Frauds using Digital Forensics Techniques**', International Journal of Innovative Technology and Exploring Engineering (IJITEE), ISSN: 2278-3075 (Online), Volume-9 Issue9, July 2020, Page No. 446-451. [Link](#)
- Yash Raj, Simriti Koul, Simran Koul. '**A Comparative Study of Different Image Encryption and Decryption Techniques**'. International Journal of Cyber-Security and Digital Forensics (IJCSDF), 2305-0012 (Online), Volume-10 Issue-1, March 2021, Page No. 17-27. [Link](#)
- Simriti Koul, Udit Singhania. '**Flower Species Detection over Large Dataset Using Convolution Neural Networks and Image Processing Techniques**'. International Journal of Innovative Science and Research Technology (IJISRT), ISSN: 2456-2165, Volume-5, Issue 8- August 2020. [Link](#)
- Simriti Koul, Apoorva Bansal, Rehan Khurshid, Prof. Ramanathan L. '**Improving the efficiency of power grids using artificial intelligence techniques**'. Solid State Technology (SST), ISSN: 0038-111X (Online), Volume-63 Issue2s, December 2020. [Link](#)
- Simriti Koul, '**Application of Deep Learning in Urban Sounds Classification**'. Turkish Online Journal of Qualitative Inquiry (TONQI), ISSN: 1309-6591 (Online), August 2021. [Link](#)
- Prajval Mohan, Tejas Jambhale, Lakshya Sharma, Simran Koul, Simriti Koul. '**Load Balancing using Docker and Kubernetes: A Comparative Study**'. International Journal of Recent Technology and Engineering (IJRTE). ISSN: 2277-3878 (Online), Volume-9 Issue-2, July 2020. Page No. 782-792. [Link](#)

- Prajval Mohan, Tejas Jambhale, Lakshya Sharma, Simran Koul, Simriti Koul. '**Load Balancing using Docker and Kubernetes: A Comparative Study**'. International Journal of Recent Technology and Engineering (IJRTE). ISSN: 2277-3878 (Online), Volume-9 Issue-2, July 2020. Page No. 782-792. [Link](#)
- Prajval Mohan, Adiksha Sood, Lakshya Sharma, Simran Koul, Simriti Koul. '**PC-SWT: A Hybrid Image Fusion Algorithm of Stationary Wavelet Transform and Principal Component Analysis**'. International Journal of Engineering and Advanced Technology (IJEAT). ISSN: 2249-8958 (Online), Volume-9 Issue-5, June 2020, Page No. 700-705. [Link](#)

## EXTRACURRICULAR ACTIVITIES

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- **Marketing Head** in Indian Graduate Student Association at George Mason University - June 2022 - May 2023
- **Core Committee Member** in Youth Red Cross at VIT University - January 2018 - December 2020

## CERTIFICATIONS

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- **TCM SECURITY:** Practical Ethical Hacking The Complete Course
- **SKILL UP BY SIMPLILEARN:** Certified Information Systems Security Professional (CISSP), Introduction to Data Analytics, Getting Started with AWS, Introduction to Cyber Security, Learn CCNA 200-301 Network Fundamentals Online
- **AUDITBOARD ACADEMY:** Planning Your Audits, Preparing Audit Projects, Audit Forms, Audit Issue Management, Audit Testing and Documentation, Audit Universe Risk Assessments, Resource Planning, Reviewing Audit Data and Testing Results
- **LINKEDIN LEARNING:** Cloud Security and Audit Fundamentals, AWS, Microsoft Azure, and Google Cloud, Audit and Due Diligence Foundations, Building and Auditing a Cybersecurity Program, Performing a Technical Security Audit and Assessment.

## CLEARANCE

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Eligible for upto Secret Level Clearance through Limited Access Clearance