Adeen Ayub

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Education:

PhD in Computer Science **CGPA:** 3.75/4.00	**Virginia Commonwealth University, VA, USA**	**02/2020 - Present**
MS in Cyber Security **CGPA:** 3.540/4.000	**New York University, NY, USA**	**01/2018 – 05/2019**
B.E Software Engineering **CGPA**: 3.39/4.00	**National University of Sciences and Technology, Pakistan**	**09/2012 -06/2016**

Work Experience:

- **Research Assistant at SAFE Lab, Virginia Commonwealth University** **02/2020 - Present**
  Interests: Industrial Control Systems vulnerabilities, Memory Forensics, Reverse Engineering
- **Teaching Assistant at Virginia Commonwealth University** **08/2021 – 12/2021**
  Worked as TA for Fundamentals Software Engineer. Assisted Professor in grading assignments and holding labs
- **Contract Penetration Tester at Defiant, Inc** **10/2019 – 11/2019**
  Tested the network infrastructure and web applications to find vulnerabilities and provided a report of findings

Publications

- **[DFRWS EU].** Nauman Zubair, **Adeen Ayub,** Hyunguk Yoo, Irfan Ahmed, "PEM: Remote Forensic Acquisition of PLC Memory in Industrial Control Systems", In the 9th Annual Digital Forensics Research Conference Europe (DFRWS EU'22), March 2022, Oxford, United Kingdom
  (Best Paper Award)
  (Acceptance rate (32.5%): 13 out of 40 submissions)
- **[WOOT]. Adeen Ayub**, Hyunguk Yoo, Irfan Ahmed, "Empirical Study of PLC Authentication Protocols in Industrial Control Systems", In the 15th IEEE Workshop on Offensive Technologies (WOOT'21), co-located with the 42nd IEEE Symposium on Security and Privacy and in cooperation with Usenix, San Francisco, CA, May 2021 (held virtually)
  (Acceptance rate (35%): 12 out of 34 submissions)
- **[ICCIP].** Syed Ali Qasim, **Adeen Ayub**, Jordan Johnson, Irfan Ahmed, "Attacking IEC-61131 Logic Engine in Programmable Logic Controllers in Industrial Control Systems", In the 15th IFIP International Conference on Critical Infrastructure Protection (ICCIP), March 2021, Arlington, Virginia (held virtually)

Peer-Reviewed Posters & Presentations:

- **[HotSoS]. Adeen Ayub,** Hyunguk Yoo, Irfan Ahmed, "Empirical Study of PLC Authentication Protocols in Industrial Control Systems", In the 9th Annual Hot Topics in the Science of Security (HotSoS) Symposium, Urbana-Champagne, Illinois, April 2022. (Presentation) *[to be held virtually]*
- **WiCyS]. Adeen Ayub,** Irfan Ahmed, Hyunguk Yoo, "ROP on PLCs", In the 9th Annual Women in Cybersecurity (WiCyS) Conference, Cleveland, OH, March 2022.
- **[WiCyS]. Adeen Ayub,** Irfan Ahmed, Hyunguk Yoo, "Empirical Analysis of PLC Authentication Protocols in Industrial Control Systems", In the 8th Annual Women in Cybersecurity (WiCyS) Conference, Denver, CO, September 2021.
  (Best Graduate Research Poster Award)
- **[WiCyS].** Nixy Camacho, **Adeen Ayub**, Irfan Ahmed, Hyunguk Yoo, "Automating Binary Analysis of PLCs", In the 8th Annual Women in Cybersecurity (WiCyS) Conference, Denver, CO, September 2021. (Poster)

Technical Workshops and Talks:

- **[DFRWS EU].** "Network Forensics of Industrial Control Systems", In the 9th Annual Digital Forensics Research Conference Europe (DFRWS EU'22), March 2022, Oxford, United Kingdom.
  (2-hour workshop)
- **[DFRWS].** "Understanding and Subverting PLC Password Authentication in Industrial Control Systems", In the 20th Annual Digital Forensics Research Conference (DFRWS'20), July 2020, Memphis, TN. (held virtually)
  (3-minute Lightning Talk)

Awards and Honors:

- Best Paper Award
  9th Annual Digital Forensics Research Conference Europe (DFRWS EU'22), March 2022, Oxford, United Kingdom
- Best Graduate Research Poster Award
  8th Annual Women in Cybersecurity (WiCyS) Conference, Denver, CO
- Recipient of WiCyS conference scholarship, September 2021]
- Recipient of WiCyS conference scholarship, March 2022
- Participated in National Cyber League (Spring '19) and was among the top performers in my bracket
- Recipient of 2018 $(ISC)^2$ Women's Cybersecurity Scholarship
- Recipient of 2018 ISSA Foundation (Shon-Harris Memorial) Scholarship
- Won Laptop and internet device in Pakistan's Prime Minister's Laptop Scheme (based on class ranking) in 2016
- Recipient of NUST Merit-based Scholarship in 3^{rd}, 4^{th} and 7^{th} Semester (Fall 2013- Spring 2014 and Fall 2015)

Academic Services:
[DFRWS USA]. Sub-reviewer of Digital Forensics Research Conference, 2021

Volunteer Work:

- **Teaching Assistant at Summer Innovation Camp 2021**
  Coached middle and high school students into developing innovative solutions, lead brainstorming activities and fostered team building through real-world problems via the corporate partner scenarios

Software/Hardware Vulnerability Disclosure:

- CVE-2021-32980, Automation Direct CLICK PLC,
  https://us-cert.cisa.gov/ics/advisories/icsa-21-166-02
- CVE-2021-32980, Automation Direct CLICK PLC,
  https://us-cert.cisa.gov/ics/advisories/icsa-21-166-02
- CVE-2021-32984, Automation Direct CLICK PLC,
  https://us-cert.cisa.gov/ics/advisories/icsa-21-166-02
- CVE-2021-32986, Automation Direct CLICK PLC,
  https://us-cert.cisa.gov/ics/advisories/icsa-21-166-02
- CVE-2021-32982, Automation Direct CLICK PLC,
  https://us-cert.cisa.gov/ics/advisories/icsa-21-166-02
- CVE-2021-32978, Automation Direct CLICK PLC,
  https://us-cert.cisa.gov/ics/advisories/icsa-21-166-02
- CVE-2021-32926, Rockwell Automation Micro800 and MicroLogix 1400 PLCs
  https://us-cert.cisa.gov/ics/advisories/icsa-21-145-02
- CVE-2020-15791, Siemens S7-300 and S7-400 PLCs,
  https://cert-portal.siemens.com/productcert/pdf/ssa-381684.pdf

Technical Skills:

- **Programming Languages:** Python, C, C++

- **Security related tools:** IDA, GDB, Nmap, ZAProxy, BurpSuite, Metasploit, Nikto, OpenVAS, Meterpreter, JohnTheRipper, Hashcat, Scapy, Wireshark, Dirbuster
- **Operating Systems:** Kali Linux, Linux(Ubuntu), Windows XP/7/8.0/8.1/10
- **Miscellaneous:** Django, LaTeX, GitHub, MySQL