Hassan **Nadeem**

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Work Experience

Bloomberg L.P. *New York, NY*

Software Engineer *July 2019 - Present*

- Worked in a team as a full stack engineer to support Bloomberg Enterprise Access Point, eap.bloomberg.com. Serves >2M API requests/day.
- Built multiple backend RestAPI micro-services using Python , Flask , FastApi , Gunicorn , Apache Solr and Apache Kafka .
- Created UI components using node , Express , TypeScript and React .
- Spearheaded the delivery of various features from technical design, development, deployment to maintenance.

Virginia Tech *Blacksburg, VA*

Research Assistant - Systems Software Research Group (SSRG) *August 2017 - May 2019*

- Worked under the supervision of a Research Assistant Professor, this work resulted in a publication in ASPLOS 2022.
- Improved OS security by implementing Linux Kernel Module continuous address space re-randomization to defend against Just-In-Time ROP attacks.
- Added support to compile and load Linux Drivers as position independent code, extending KASLR to 64 bits.
- Implemented lockfree, high performance algorithm for stack and code re-randomizaton.
- Experiments with ethernet driver re-randomized at 1ms period resulted in negligible impact on CPU utilization and network throughput.

Mentor Graphics / Siemens *Lahore, PK*

Software Engineer - AUTOSAR OS *August 2016 - June 2017*

- Worked in a team to implement features and maintain AUTOSAR OS for automotive ECUs.
- Responsible for maintaining AUTOSAR OS port on ARM Cortex processors.

Viaesys *Canada (Remote)*

Software Engineer *May 2015 - July 2016*

- Worked independently to design and code a hardware gadget for GPS Tracking, Salt Tracking and Field Crew Management for US/Canada for the municipal industry. These devices are operational on the field today.
- Developed firmware for ARM® Cortex® M4 µProcessor with fixed-priority preemptive scheduling featuring support for file system and over the air updates. Wrote drivers to interface with various sensors over a variety of communication protocols.
- Developed Python based framework to build, package and deliver over the air updates via TFTP.

LUMS *Lahore, PK*

Undergraduate Teaching Assistant - Microcontrollers and Interfacing, Introduction to Programming in C++ *Fall, Spring 2014-15*

- Worked under the supervision of a Professor to design development boards that were used in lab exercises and course projects (~150 pupils).
- Updated Lab Manuals, delivered lab lectures , evaluated students' lab performance and supervised their course projects.

Education

Virginia Tech *Blacksburg, VA*

M.S. in Computer Science *August 2017 - May 2019*

GPA: 3.78. Courses: Linux Kernel Programming, Computer Architecture, Multiprocessor Programming, Systems Security, Data Analytics, Info Visualization, Urban Computing

LUMS *Lahore, Pakistan*

B.S. in Electrical Engineering *August 2011 - May 2015*

GPA 3.35. Courses: Microcontrollers and Interfacing, Embedded Systems, Computer Networks, Data Structures

Skills

Programming	Proficient:{ Python, C }; Experience in:{ Javascript, Typescript, Java, nginx, MATLAB, C++, Assembly Language, Linker Script, Makefile };
Technologies	Apache Solr, Apache Kafka, React, Rest, Docker, Jenkins, OpenAPI, Rest
Others	Linux Kernal, ELF, Git, SPI, UART, I2C, Hardware Debugging

Publications

Adelie: Continuous Address Space Layout Re-randomization for Linux Drivers *27th edition of the ASPLOS*

2nd Author *ASPLOS 2022*

- Adelie, our linux kernel defense mechanism, overcomes KASLR limitations, increases KASLR entropy, and makes successful ROP attacks on the Linux kernel much harder to achieve.