

Adeel Ahmad

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WORK EXPERIENCE

- Fellow in Authentication Team, European Organization for Nuclear Research (CERN)** **September 2020 — Present**
Developed a permanent 2FA solution for the CERN SSO. Automated cloud configuration using Puppet. *Geneva, Switzerland*
Doing Linux server administration for load balancing our cluster setup. Developing **high-throughput tools** to synchronize **E-groups to Grappa**. Extending and refactoring our large-scale C# and Python APIs.
- Technical Student in Computer Security, European Organization for Nuclear Research (CERN)** **September 2018 — October 2019**
Worked on the CERN SOC's **Incidence Response system** to analyze and report security incidents. Wrote *Geneva, Switzerland*
a **high-throughput Go tool** to monitor anomalous SSH login activity. Created Puppet modules to install and configure RPM packages.
- C++ Software Developer, Google Summer of Code 2018(Boost C++ Libraries)** **May 2018 — August 2018**
Improved the accuracy (from cm to μm) of a distance algorithm in the **Boost C++ library**. Wrote extensive unit tests *(Remote)*
and benchmarked the system against existing algorithms. Used template metaprogramming for improving performance.
- Python Software Developer, Google Summer of Code 2017 (Open Astronomy)** **May 2017 — August 2017**
Developed a Python library to visualize and run analysis on astronomical image sets. Used asynchronous programming *(Remote)*
to reduce fetch latency by 75%*. Added extensive test cases using Pytest.

EDUCATION

- Georgia Institute of Technology, Masters of Computer Science, GPA: 3.67/4.0** **2020 — Present**
Courses: Advanced Operating Systems, Software Analysis, AI for Robotics, Computer Vision, ML for Trading *(Remote)*
- National University of Computer and Emerging Sciences, Bachelors of Computer Science, GPA: 3.01/4.0** **2014 — 2018**
Thesis: "Analysis of Structure from Motion Techniques" *Islamabad, Pakistan*

COURSE PROJECTS

- Machine Learning for Trading [Python, Pandas]** **September 2022**
Created a trading simulator using a Q-learning approach. Studied Technical Indicators for finding trends in stock prices and executed trading actions to maximize profit on a test data set.
- Computational Photography [Python, OpenCV]** **March 2022**
Implemented an image in-painting algorithm to remove objects from pictures, similar to Pixel 6 Magic Eraser. Created a pipeline to align and stitch together images using blending to form a panorama.
- Advanced Operating Systems [C, Libvirt, OpenMP]** **September 2021**
Implemented a vCPU scheduler and a memory coordinator to dynamically manage CPU and RAM assigned to each guest machine. Created graph plots to analyze usage patterns. Implemented Barrier Synchronization algorithms in OpenMP and MPI.

OPEN-SOURCE PROJECTS

- Trip Planner [Python]** — Queries Google Maps places based on an input query and exports them to a CSV file. *(featured on HNews)*
- 16 Bit Micro Processor Simulator [Assembly x86]** — x8086 graphical implementation of a 16-bit micro processor.
- Leaf Classification [Python]** — ML pipeline to automate the process of plant recognition using a leaf image.

TRAININGS AND CONFERENCES

- Kubernetes for Developers** **(in progress)**
A hands-on course explaining the Kubernetes architecture and how the deployment configuration works.
- Red Hat Linux System Administration** **December 2020**
Covered process, memory, and I/O monitoring, filesystems (BTRFS, VFS, LUKS), RAID and LVM, drive encryption, file ACLs, PAM, networking tools, firewalls, systemd, udev, bootloaders.
- Thematic CERN School of Computing** **May 2019**
Topics covered high throughput computing, vectorization, optimization, and I/O.

FEATURED BLOG POSTS

- Passwordless Logins with Yubikey (CERN Lightning talk)** **February 2021**
- Trip Planner – A tool for planning a trip itinerary using Google Maps (CERN Lightning talk)** **October 2019**

SKILLS

C++, C#, Python, Java, Go, Arch Linux, Systemd, Awk, sed, Puppet, MySQL, PostgreSQL, Google Cloud Platform