

Adeel Ahmad

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WORK EXPERIENCE

Fellow in Authentication Team, **European Organization for Nuclear Research (CERN)** September 2020 — Present
Geneva, Switzerland

- Built **permanent 2FA** for Keycloak. Rolled new SSO to 10k+ users with **80k logins per day**.
- Setup **compromised password check** to protect \$100M LHC control machines from unauthorized access; **resolved 1,177 compromised accounts**.
- Maintained **99.9% service availability** of Keycloak, troubleshooted time-critical issues manually.
- Built **CI/CD pipelines** with custom **Dockerfiles**; reduced deploy time by 4 minutes, saving 200+ dev hours per year.
- Setup Grafana using Prometheus metrics to **alert for system downtime** via email, Slack, and Telegram.
- Created a custom Flask JSON logger [↗](#) to improve **log monitoring** using Kibana; saved at least 5 dev hours per week.
- Automated Keycloak **configuration management** using **Puppet**, reducing deploy time by 50%.
- Developed an API to manage **OIDC** and **SAML** registrations, reducing manual efforts significantly.

Technical Student in Computer Security, **European Organization for Nuclear Research (CERN)** September 2018 — October 2019
Geneva, Switzerland

- Developed an **incidence response system** for copyright infringements (average 50 cases per week).
- Built an **anomalous login activity** system in Golang for CERN VMs; **alerted user within 10 seconds** of login breach.
- Created **Puppet modules** to install and configure RPM packages, reducing manual effort by 50%.

C++ Software Developer, **Google Summer of Code 2018 (Boost C++ Libraries)** [↗](#) May 2018 — August 2018
(Remote)

- Implemented a distance algorithm in Boost C++ library and demonstrated existing inaccuracy in a blog post [↗](#).
- **Improved accuracy by 5%** and **reduced execution time by 10%** over the existing approach.
- Wrote **unit tests** achieving 95% code coverage and performed **system benchmarks**.

Python Software Developer, **Google Summer of Code 2017 (Open Astronomy)** [↗](#) May 2017 – August 2017
(Remote)

- Developed a Python tool [↗](#) to visualize astronomical images, supporting numerous geographical systems.
- Used **asynchronous programming** to reduce fetch latency by 75%.

EDUCATION

Georgia Institute of Technology, Masters of Computer Science, GPA: 3.57/4.0 2021 — Present
Atlanta, GA, US
Courses: ML for Trading, Network Science, Computer Vision, AI for Robotics, Advanced Operating Systems, Computational Photography, Software Analysis & Testing

National University of Computer and Emerging Sciences, Bachelors of Computer Science, GPA: 3.01/4.0 2014 — 2018
Islamabad, Pakistan
Thesis: “Analysis of Structure from Motion Techniques” [↗](#)

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

COURSE PROJECTS

Machine Learning for Trading September 2022
Created a trading simulator using Q-learning approach. Studied Technical Indicators for finding trends in stock prices.

Computational Photography [↗](#) March 2022
Implemented an image in-painting algorithm to remove objects from pictures, similar to Pixel 6 Magic Eraser.

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* [↗](#)).
Edge detectors [Python] [↗](#) — Image edge detection algorithms.

TRAININGS AND CONFERENCES

CHEP 2023 [↗](#) May 2023
Presented my work on improving the two factor authentication (2FA) deployment at CERN (Talk [↗](#)). Norfolk, VA, US

SKILLS

Python, C++, C#, Go, IAM, OAuth2, OIDC, SAML, LDAP, MySQL, Puppet, Docker, Nginx, Grafana, Kibana, PostgreSQL, AWS, GCP