

Adeel Ahmad

adl1995.github.io 

Education

Georgia Institute of Technology
2020- GPA: 4.0/4.0 *(Remote)*
Master's of Computer Science

Specializing in Computing Systems.


National University of Computer
and Emerging Sciences
2014-2018 GPA: 3.01/4.0 *(Pakistan)*
Bachelor's of Computer Science

Thesis: "Analysis of Structure from
Motion Techniques" 

Open-source Projects

GeoLib  [C++, Boost]

Distance computation algorithms using
C++ template specialization.

Particle Swarm Optimization 
[C++, mpack]

PSO algorithm for constrained optimization
problems in mpack library
using template metaprogramming.

Edge detectors  [Python]

Image edge detection algorithms.

Trip Planner  [Python]

CLI tool for filtering Google Maps
places based on an input query and
exported them to a CSV file.
(featured on Hacker News)

Toolsets

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

Featured Blog Posts

Passwordless Logins with Yubikey 

Trip Planner – A tool for planning a
trip itinerary using Google Maps 

Interests

Kayaking, Skiing, Traveling 

Work Experience

Fellow in Authorization Team **September 2020 - Present**
European Organization for Nuclear Research (CERN) *Geneva, Switzerland*
(Team size: 6)

Developed a permanent 2FA solution for the CERN SSO and running
campaign to migrate all users. Doing Linux server administration for load
balancing our cluster setup. Monitoring server logs with Kibana and Grafana.
Extending and refactoring our C# and Python APIs.


Technical Student in Computer Security **September 2018 - October 2019**
European Organization for Nuclear Research (CERN) *Geneva, Switzerland*
(Team size: 9)

Wrote a Go tool to monitor anomalous SSH login activity on the CERN
campus. Created Puppet modules to install and configure RPM packages. Attended
conferences and met with security leaders across Switzerland.

C++ Software Developer **May 2018 - August 2018**
Google Summer of Code 2018 (Boost C++ Libraries) 

Improved the accuracy (from *cm* to *μm*) of a distance algorithm used in
the aerospace industry for creating flight plans. Benchmarked the new system
to show performance and accuracy gain.

Python Software Developer **May 2017 - August 2017**
Google Summer of Code 2017 (Open Astronomy) 

Developed a package to visualize and run analysis on astronomical images.
Used asynchronous programming to reduce fetch latency by 75%* 

Course Projects

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.

Robotics: AI Techniques [Python] **January 2021**

Implemented Kalman and Particle filters for robot location tracking.
Used A* search to find the shortest distance. Improved location accuracy using
SLAM. Reduced motion noise using a PID controller.

Software Analysis [C, LLVM] **May 2021**

Wrote LLVM passes in C to perform divide-by-zero runtime checks and
report code coverage. Implemented Reaching Definition and Liveness analysis
to find unused variables in a program.

Trainings and Conferences

A Practical Introduction to Quantum Computing  **November 2020**

Studied the Deutsch quantum algorithm and quantum circuit model
(Qubits, gates, and measures). Introduction to D-Wave Leap. Interactive
exercises in Jupyter notebook.

Red Hat Linux System Administration  **December 2020**

Covered process, memory, and I/O monitoring, filesystems (BTRFS, VFS,
LUKS), drive encryption, file ACLs, PAM, networking tools, firewalls.