Adeel Ahmad

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Work experience

Technical Student in Computer Security [Team size: 10]   September 2018 - Present
European Organisation for Nuclear Research (CERN)   Geneva, Switzerland

- Cloud automation: Created Puppet modules to install and configure RPM software packages. The parameters were passed externally from a hostgroup using Heira.
- RPM package creation: Used 'rpmbuild' in conjunction with Spec files to create RPM packages. This process was documented in a blog post ⇗ .
- User login monitoring: A Golang tool for real-time anomaly detection of SSL login attempts to CERN machines. The data was ingested from a Spark cluster.
- Collectd plugin: A plugin to identify whether a system needs a reboot after a package update using the Collectd Unix daemon. Wrapped the plugin in an RPM and deployed it using Puppet.
- Incident response handling: Handled user incidents including copyright infringements and account abuse cases using a Django-based web application called Fast Incident Response (FIR ⇗).

C++ Software Developer [Team size: 3]   May 2018 - August 2018
Google Summer of Code 2018 (Boost C++ Libraries) ⇗   (Remote)

- Implemented a generalised version of a distance algorithm using C++ template parametrisation.
- Used modern C++ features to ensure a performance-critical and secure implementation.
- Benchmarked the accuracy and execution time against existing algorithms using Boost Chrono library.

Python Software Developer [Team size: 3]   May 2017 - August 2017
Google Summer of Code 2017 (Open Astronomy) ⇗   (Remote)

- Developed a Python CLI package for the visualisation and analysis of astronomical images.
- Reduced the fetch latency of data by employing asynchronous programming techniques.
- Wrote parametrised test cases and used Travis CI for continuous integration.

Full-Stack Web Developer   January 2017 - April 2017
Upwork   (Remote)

- Developed and maintained large-scale PHP Laravel web applications and designed databases.
- Diagnosed web hosting issues and deployed applications on cloud services.

Education

Bachelor of Computer Science   August 2014 - June 2018
National University of Computer and Emerging Sciences   Islamabad, Pakistan

- Final year project: "Analysis of Structure from Motion Techniques" ⇗

   Abstract: Implemented the structure from motion pipeline to reconstruct a 3D point-cloud representation from monocular images.

Projects

Particle Swarm Optimisation ↗ [C++, mlpack]   February 2018

Implemented the constriction and inertia weight variant of the PSO algorithm for constrained optimisation problems in the mlpack ↗ machine learning library. Designed the API following a policy-based approach using template metaprogramming in C++.

Image Processing ↗ [Python, NumPy]   December 2016

Automated the process of checking a multiple-choice question based exam using template matching and 2D cross-correlation.

GeoLib ↗ [C++, Boost]   March 2018

Used template specialisation to implement a generalised version of distance computation algorithms and benchmarked their implementation against Boost Geometry.

Events and conferences

Thematic CERN School of Computing ↗   May 2019

An annual school based on the topic of high throughput computing which involved   Split, Croatia
lectures on vectorisation, optimisation, and effective I/O for scientific applications.

Insomni'Hack ↗   March 2019

A security-based conference which involved talks on hardware and software level   Geneva, Switzerland
exploits and a capture-the-flag event.

Swiss Web Security Day ↗   October 2018

A platform to bring together individuals from technology, business, politics, research,   Bern, Switzerland
and public sector on the global topic of cyber security.

Skills

Programming languages: Go, Python, C++, Assembly (x86), LaTeX

Cloud management: Puppet, OpenStack, Docker, GitLab CI, Google Cloud Platform

Web development / databases: Django, Laravel, React, jQuery, MySQL, PostgreSQL, Apache

Machine learning: OpenCV, TensorFlow, Scikit-learn, NumPy, Pandas

Interests

Kayaking, Skiing, Cooking, Reading, Travelling ↗