Ahmad Afnan Amjad

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Education

LUMS University

Lahore, Pakistan
2017 - Present

- **B.S. in Computer Science, Subject CGPA: 3.13/4.00**
  - Intro to Internet of Things
  - Network-Centric Computing
  - Intro to Artificial Intelligence
  - Advanced Programming
  - Digital Logic Circuits
  - Data Structures
- **Minor in Physics**
  - Quantum Mechanics
  - Electromagnetic Fields and Waves

Salamat International Campus for Advanced Studies (SICAS)

Lahore, Pakistan

- **Cambridge A' Level, 2A**
  2015 - 2017
  - Computer Science, Physics, Chemistry, Mathematics
- **Cambridge O' Level, 4A*, 2A, 1B**
  2012 - 2015
  - ICT, Physics, Mathematics, Chemistry

Projects

Time and Motion Study Software

Laravel, PHP, MySQL, Bootstrap, JavaScript
October 2020 - Present

I am currently developing a software to aid in Time and Motion Study of industrial processes. It is intended to be used by industrial engineers who are working to optimise the assembly line for maximum speed.

Distributed Greenhouse Monitoring and Control System

Contiki-NG, Tmote Sky, C language, Python, scikit-learn
July - August 2020

I developed an end-to-end system for monitoring and controlling a greenhouse system to achieve and maintain optimal plant growth conditions for my Introduction to Internet of Things course. A number of Tmote Sky devices were installed at different points in the greenhouse to collect environmental data and send it over to a server for processing. The server then sends commands to raise an alarm if any abnormal/hazardous conditions are detected. However, due to COVID-19, I was not able to physically implement the system on hardware and instead it was emulated in Cooja.

Artificial Intelligence

January - May 2020

- **Neural Network for MNIST Handwritten Digits Classification**
  Python, NumPy
- **Genetic Algorithm maze solver**
  Python, Jupyter Notebook
- **Several other AI algorithms**
  Python, Google Colab, Pytorch

Networks

January - May 2020

- **Peer-to-peer File Sharing System using a Distributed Hash Ring**
  Python
- **Implementation of Intra-Network Distance-Vector Routing Protocol**
  Python
- **Best-Effort Application Layer Packet Delivery Protocol over UDP**
  Python, Sockets

Electronic Medical Record System

ReactJS, Bootstrap, ExpressJS, PassportJS, OAuth, NodeJS, JavaScript, PostgreSQL, Heroku
January - May 2020

I was part of a team that developed and deployed an Electronic Medical Record system for use in a clinical setting, as part of our Software Engineering course. The project can be accessed at e-m-r-s.herokuapp.com and the Git repository is located at github.com/AhmedFarhan252/EMRS.

Digital Logic Circuits

January - May 2020

- **Implementation of Conway's Game of Life using Fully Custom Logic Circuits**
  Logic Gates, Proteus Design Suite
- **State Machine for 12-bit Binary Sequence Interpretation**
  Logic Gates, 16 kB x 8 bit ROM IC, 6-bit Flip-Flop IC with common clock

Hyperloop Pod Competition

Creo Parametric
September - November 2018

I was part of the PAKLoop team for SpaceX's 2019 Hyperloop Pod Competition. As part of the Propulsion sub-team, I designed a novel Triple-Thruster Rocket Engine for the Pod.

Tetris Clone

C++
September - December 2017

I developed a fully playable Tetris Clone in C++ for my introductory level Computational Problem Solving course.

Autonomous Line Following Robot with Obstacle Detection

Arduino Mega, C language
September - December 2017

I was part of a team that developed a fully functioning Autonomous Line Following Robot which also included a set of ultrasonic sensors for obstacle detection for our introductory level Engineering Lab course. The task given to us was to navigate a maze in the shortest possible time. Our robot got first place in that competition.

Skills

- Python
  - PyTorch
  - NumPy
  - scikit
- PHP
  - Laravel
- C/C++
- JavaScript
  - React
  - Vue
  - Node
- Go
- Rust
- Shell scripting
  - Linux
  - Windows
- HTML/CSS
- MATLAB

Work Experience / Society Work

CEO at Amjad Amin Forgings

August 2018 - Present

I have served as the CEO of my father's company since his demise in August of 2018. The company primarily focuses on making auto parts by forging. Parts for Massey Ferguson and FIAT tractors make up a majority of our sales.

Director of the LUMS Space Observatory

2019 - 2020

I have served as the Director of the LUMS Space Observatory, which is operated by the SPADES society, for one academic year. Before that, I was the Assistant Director for one academic year.

Trainee MFR at LUMS EMS

September - December 2017

I participated in a semester-long MFR (Medical First Responder) training course held by LUMS EMS (Emergency Medical Services) in my first semester, where I learnt and practised the appropriate First Aid procedures for several different types of mild to severe medical emergencies.

Vice President of SAW

2016 - 2017

I served as Vice President of the SAW (Scientists At Work) society at my school for the academic year 2016 - 2017.

Cadet at Buraq Space Camp

December 2014

I was among the 40 top students of ages 14-16, who were selected from all over Pakistan to attend the Buraq Space Camp 2014.

Talks / Lectures

LHC Interactive Tunnel

October 2019

For the Lahore Science Mela 2019, I was part of the LHC Interactive Tunnel demonstration which was done in official collaboration with CERN. It was a 2 day event, with several hundreds of visitors, and it was broadcast on TV all over Pakistan.

The LHC Interactive Tunnel (LIT) is a set of large-scale Augmented Reality demonstrations designed by the CERN Media Lab. It allows people to learn about LHC and Particle Physics in a fun and interactive way. A video of LIT in action can be found at https://youtu.be/7G7FOCzLXUY.

"Invisibility Cloak" Demonstration for SPIE

July 2019

I developed and presented a demonstration for SPIE (Society of Photo-Optical Instrumentation Engineers) LUMS Student Chapter where I showed how an object can be made invisible using a specific arrangement of prisms, by 'bending' light around the object. The audience included dozens of schoolkids in Chiniot.

Hyperloop at ITE Tech Week, UET Lahore

February 2019

I, along with a few other members of my Hyperloop Pod Competition team, gave a presentation at Tech Week 2019, which was organised by the ITE (Institute of Transportation Engineers) Student Chapter at UET (University of Engineering and Technology) Lahore.

Hyperloop at Buraq Space Camp

December 2018

I delivered a lecture about Hyperloop and my experience with that year's Hyperloop Pod Competition at the Buraq Space Camp 2018, in Islamabad. The audience comprised of the top 40 students of ages 14-16 years from all over Pakistan.

Hobbies

- Tinkering with technology
- Reading Wikipedia
- Photography
- Astronomy
- Hiking/Trekking
- Cycling