Muhammad Ali

Contact
- **Email** 37alirisalpur@gmail.com
- **Phone** +92 311 5112586
- **Address** Marghuz, Swabi, KPK, Pakistan

Attachments
- **Self-introduction video** https://bit.ly/3jG8TkP
- **Portfolio** https://mmali.netlify.app/
- **Sample research project** https://youtu.be/aDtnSoSor4E
- **Sample research proposal** https://bit.ly/3FdWZpk
- **Sample practical work** https://youtu.be/NtWT8aEdATg
- **Supporting documents** https://bit.ly/3v62nqc

Education
- **Pakistan Institute of Engineering and Applied Sciences (PIEAS)**
  - BS Electronics Engineering
  - Sep 2018 - June 2022
  - CGPA: 3.74 / 4.00
  - Distinction with 2nd position
- **Fazaia Degree College, MRF, Kamra**
  - School: Matriculation
  - April 2013 – March 2015
  - Percentage: 95 %
  - Distinction with 1st position
- **Fazaia Degree College, Risalpur**
  - College: FSC Pre-engineering
  - June 2015 – May 2017
  - Percentage: 83%
  - Distinction with 4th position

Work Experience
- **Cloud Core Network Engineer at Huawei, OEC tower, Isb**
  - Date: 22-08-2022 --- Present
  - **Group Leader:** 03-10-2022 --- Present
- **Robotics Engineer at Natinal Instiute of Electronics, Sector H-9, Isb**
  - Date: 02-08-2021 --- 24-09-2021
  - Made **two-wheel self-balancing robot**
- **Vice-president IEEE Robotics PIEAS Student Branch**
  - Date: 20-Sep-2021 --- 16-May-2022
  - Responsibilities: Organizing seminars and workshops on Robotics

Huawei's Projects
- 5G Core Deployment (AMF)
- Cloud Edge (MME)
- Network function virtualization (FusionSphere OpenStack)

Research Experience
- Implementation of deep learning control for a Quadcopter
  - Made digital twin of Quadcopter in gazebo environment (in Ubuntu OS)
  - Trained the model through Proximal Policy Optimization, a reinforcement learning algorithm
  - Replaced the PID algorithm of betaflight with our trained model
  - Compiled the modified betaflight to create a hex file
  - Assembled the Quadcopter (used STM32F722 microcontroller which runs up to 216 MHz)
  - Flashed the hex file to quadcopter using betaflight configurator
  - **Video:** https://youtu.be/aDtnSoSor4E

Technical Projects	• Maze Solver Robot
	• Line follower robot
	• Controlling Servo from Web browser wirelessly using ESP32
	• Controlling Servo using Potentiometer and ESP32
	• 15,000 mAh Laptop Power Bank
	• Android P2P messaging App
	• Trained Reinforcement Learning agent for autonomous driving
	• Reinforcement Learning for Atari Breakout Game
	• Trained Neural Network for Image prediction
	• Training CartPole to balance itself
	• Tic-tac-toe game using a C++ programming language
	• Detection of cracks in Ceramic Tiles using Digital Image Processing
	• Designed a 1kVA UPS powered by a single-phase 220V/50Hz AC.
	• Designed 8-bit SAR ADC
	• Designed and implemented a stepper motor controller
	• 35% Duty Cycle Rectangular Waveform using Astable Multivibrator (555 Timer)
	• Designed a filter
	▪ that removes cross-over distortion from class B push-pull amplifier
	▪ that minimizes noise coming from a tape recorder.
	▪ for a car alternator.

Skills

• **Programming Languages**
  C++, Python, C, and Java

• **Integrated Development Environments (IDEs)**
  MATLAB/Simulink, Arduino IDE, Xilinx ISE, Keil, LTspice, MobotSim, ModelSim, Visual Studio, Android Studio, Gazebo simulator, GymFC, Autodesk Inventor, Creo Parametric, Virtual box(Linux/Ubuntu), Microsoft Word, PowerPoint, Excel

• **Electronics Boards**
  ESP32 MCU, Spartan 3 SoC FPGA, Arduino Due, and Arduino Mega, Uno, Nano

• **Sensors/ Actuators etc**
  6-axis IMU; quadrature encoder; GPS, ultrasonic, IR, barometer, temperature sensors; 3S 12V 25A BMS; Radio transceiver; servo, stepper, DC, brushless motors

• **Practical Work**
  PCB Designing, Veroboard usage/Soldering, Metalworks (lathe Machine, Wielding, etc.), Wood Works

• **Web Development**
  React, CSS, Tailwind CSS, HTML, JavaScript

• **Media**
  Graphics Designing; Animation; Video, Photo, and Voice Editing

• **Soft Skills**
  Quick Learning Ability, self-management, adaptability, responsibility, time- management, teamwork, leadership

• **Other**
  Blog writing, Thoughts illustration, MS Office

Leadership/ Volunteer Experience	• Head Design Team at PIEAS Literary Society	*Jan 2021 – May 2021*
	• Head Videography at NGO Muaawin	*Jan 2021 – Jun 2021*
	• Co-director Videography PIEAS Media Club	*Nov 2020 – Apr 2021*
	• Inquiry Team Member at NGO Muaawin-e-rozgaar	*Dec 2020 – July 2021*
	• Head videography at IEEE's ISYWSC event	*Nov 2021 – Dec 2021*
	• Head videography PIEAS National Olympiad	*Dec 2021 – Jan 2022*
	• Organizing member at International Workshop on 2D and Quantum Effect Devices	*Nov 2018 – Nov 2018*

Awards
- Graduation with 2nd distinction
- 2nd position in maze-solver robotics competition
- 2nd position in line-follower robotics competition
- PKR 15,000 for 2nd position in 2nd semester

Languages   • Urdu   • English   • Pushto   • Punjabi   • Hindi

References

- **Dr. Naeem Iqbal**
  Dean Research, PIEAS
  naeem@pieas.edu.pk

- **Dr. Muhammad Abid**
  Professor PIEAS
  mabid@pieas.edu.pk

- **Dr. Haroon-ur-Rashid**
  Director Academics, PIEAS
  haroon@pieas.edu.pk

MUHAMMAD ALI

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- in *linkedin.com/in/m--ali*
- 📄 Documents: *bit.ly/3v62nqc*
- ▶ *https://bit.ly/3t5Pb4a*
- 📍 Marghuz , Swabi, KPK, Pakistan

Leadership/Volunteer Experience

- Head Design Team at PIEAS Literary Society
  Date: 18-01-2021 ---- 26-05-2021
  Certificate: *https://bit.ly/3i1ArwW*

- Head Videography at NGO Muaawin
  Date: 28-01-2021 ---- 29-06-2021
  Certificate: *https://bit.ly/36gOE6r*

- Co-head Videography PIEAS Media Club
  Date: 24-11-2020 ---- 13-04-2021
  Certificate: *https://bit.ly/3J92gPX*

- Inquiry Team Member at NGO Muaawin-e-Rozgaar
  Date: 21-12-2020 ---- 26-07-2021
  Certificate: *https://bit.ly/3IeALmU*

- Head videography at IEEE's ISYWSC event
  Date: 24-11-2021 ---- 15-12-2021
  Certificate: *https://bit.ly/3bTD2cR*

- Head videography PIEAS National Olympiad
  Date: 12-12-2021 ---- 03-01-2022
  Certificate: *https://bit.ly/3w3fUjR*

- Organizing member at International Workshop on 2D and Quantum Effect Devices
  Date: 12-11-2018 ---- 14-11-2018
  Certificate: *https://bit.ly/37sk0b1*

Languages

- 1- Urdu ●●●●●
- 2- English ●●●●○
- 3- Pushto ●●●●●
- 4- Hindi ●●●●○
- 5- Punjabi ●●●○○

Education

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  - Distinction with 2nd position

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Research Experience

- **Implementation of deep learning control for Quadcopter**
  - Made digital twin of Quadcopter in gazebo environment (in Ubuntu OS)
  - Trained the model through PPO, a reinforcement learning algorithm
  - Replaced the PID algo of traditional betaflight with our trained model
  - Compiled the modified betaflight to create a hex file
  - Assembled the Quadcopter (using STM32F722 MCU-based Mateksys FC F722-STD, ESC, Brushless motors, PDM, Radio transceiver etc)
  - Flashed the hex file to quadcopter using betaflight configurator
  - **Video:** *https://youtu.be/aDtnSoSor4E*

Work Experience

- **Cloud Core Network Engineer at _Huawei_, OEC tower, Isb**
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  - **Group Leader:** 03-10-2022 --- Present

- **Robotics Engineer at _National Institute of Electronics_, Sector H-9, Isb**
  - Date: 02-08-2021 --- 24-09-2021
  - **Made two-wheel self-balancing robot**
  - Video: *https://youtu.be/XZjVsQ4YW9w*
  - Certificate: *https://bit.ly/3IcEiBP*

- **Vice-president _IEEE_ Robotics PIEAS Student Branch**
  - Date: 20-Sep-2021 --- 16-May-2022
  - Responsibilities: Organizing seminars and workshops on Robotics
  - Certificate: *https://bit.ly/3i150ms*

Huawei's Projects

- 5G Core Deployment (AMF)
- Cloud Edge (MME)
- Network function virtualization (FusionSphere OpenStack)

Awards

- Graduation with 2nd distinction
- 2nd position in maze-solver robotics competition
- 2nd position in line-follower robotics competition
- PKR 15,000 for 2nd position in 2nd semester

Technical Projects

- Maze Solver Robot
  Date: 19-11-2019 ---- 20-12-2019
  Video : *https://youtu.be/NtWT8aEdATg*

- Line follower robot
  Date: 19-11-2019 ---- 20-12-2019
  Certificate: *https://bit.ly/35OvHZg*

- Controlling Servo from Web browser wirelessly using ESP32
  Date: 17-03-2021 ---- 18-03-2021
  Video : *https://bit.ly/3AkcgDW*

- Controlling Servo using Potentiometer and ESP32
  Date: 17-03-2021 ---- 18-03-2021
  Video : *https://bit.ly/3bRPzNX*

- 15,000 mAh Laptop Power Bank
  Date: 19-07-2022 ---- 28-07-2022
  Video : *https://youtu.be/zX1eYh3Lx2A*

- Android P2P messaging App
  Date: 07-12-2020 ---- 14-01-2021
  Video: *https://youtu.be/wOFHmuyRXFY*
  Report: *https://bit.ly/3KHV5yi*

- Trained Reinforcement Learning agent for autonomous driving
  Date: 15-05-2022 ---- 17-05-2022
  Code : *https://bit.ly/38nxtln*

- Reinforcement Learning for Atari Breakout Game
  Date: 17-05-2022 ---- 18-05-2022
  Code : *https://bit.ly/3wqR8Zz*

- Trained Neural Network for Image prediction
  Date: 28-04-2022 ---- 30-04-2022
  Video : *https://bit.ly/3lek8P8*

- Training CartPole to balance itself
  Date: 11-05-2022 ---- 14-05-2022
  Code : *https://bit.ly/3sAKyyG*

- Tic-tac-toe game using a C++ programming language
  Date: 06-12-2018 ---- 16-12-2018
  Report: *https://bit.ly/3i1Hw0m*

- Designed and implemented a stepper motor controller
  Date: 13-12-2019 ---- 14-01-2021
  Report: *https://bit.ly/3hZQoUu*

- Designed a 1kVA UPS powered by a single-phase 220V/50Hz AC
  Date: 18-06-2021 ---- 27-06-2021
  Report: *https://bit.ly/3MNBlv0*

- Designed 8-bit SAR ADC
  Date: 31-12-2020 ---- 30-12-2019
  Report: *https://bit.ly/36cbv3a*

- 35% Duty Cycle Rectangular Waveform using Astable Multivibrator (555 Timer)
  Date: 23-12-2019 ---- 30-12-2019
  Report: *https://bit.ly/3tglw8N*

- Detection of cracks in Ceramic Tiles using Digital Image Processing
  Date: 30-12-2021 ---- 06-01-2022
  Report: *https://bit.ly/3tSHDRx*

- Designed a filter (i) that removes cross-over distortion from class B push-pull amplifier (ii) that minimizes noise coming from a tape recorder (iii) for a car alternator.
  Date: 02-01-2020 ---- 09-01-2020
  Report: *https://bit.ly/3KCyHXh*

Skills

- **Programming Languages:** C++, Python, C, and Java

- **IDEs:** MATLAB/Simulink, Arduino IDE, Xilinx ISE, Keil, LTspice, MobotSim, ModelSim, Visual Studio, Android Studio, Gazebo simulator, GymFC, Autodesk Inventor, Creo Parametric, Virtual box (Linux/Ubuntu),

- **Electronics Boards:** ESP32 MCU, Spartan 3 SoC FPGA, Arduino Due, and Arduino Mega, Uno, Nano

- **Sensors/ Actuators etc:** 6-axis IMU; quadrature encoder; GPS, ultrasonic, IR, barometer, temperature sensors; 3S 12V 25A BMS; Radio transceiver; servo, stepper, DC, brushless motors

- **Practical Work:** PCB Designing, Veroboard usage/Soldering

- **Web Development:** React, CSS, Tailwind CSS, HTML, JavaScript

- **Media:** Graphics Designing; Animation; Video, Photo, and Voice Editing

- **Soft Skills:** Quick Learning Ability, self-management, adaptability, responsibility, time- management, teamwork, leadership

- **Other:** Blog writing, Thoughts illustration, MS Office

Online Courses

- TensorFlow 2.0 Complete Course - Python Neural Networks
  freecodecamp.org

- Python full Course for Beginners
  freecodecamp.org

- C++ full Course for Beginners
  freecodecamp.org

- 9 Axis Inertial Measurement Units with Arduino
  Paul McWhorter

- PID Control systems with Arduino
  Paul McWhorter

- Reinforcement Learning Using Python
  Edureka

- Java Programming
  Great Learning Academy

- Android Development Tutorial
  CodeWithHarry

- Gazebo Simulator Course
  Robotogeddon

- Neural networks
  3Blue1Brown

References

- **Dr Naeem Iqbal**
  Dean Research / Professor, PIEAS
  E-mail: *naeem@pieas.edu.pk*

- **Dr. Haroon-ur-Rashid**
  Director Academics / Professor, PIEAS
  E-mail: *haroon@pieas.edu.pk*

- **Dr Muhammad Abid**
  Professor, PIEAS
  Email: *mabid@pieas.edu.pk*