MUHAMMAD YASIR KHAN

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Education

- **National University of Sciences & Technology** — Islamabad, Pakistan
  BE. Electronics Engineering — *Oct. 2008 - Aug. 2012*
  - Relevant courses: Embedded Systems, C Programming, Computer Networks, Digital and analog electronics and systems Design, Operating Systems, Microprocessors, Verilog, Signal processing

Skills

Languages: ARM GNU Assembly, C, C++, Python, Bash

Software: Firmware, Linux kernel/driver development, RTOS (μC/OS-II and FreeRTOS)

Hardware: Digital and analog circuit design, prototyping, system integration, design and fabrication of PCB with SMT components, reading datasheets and schematics

Processors/Platforms: ARM Cortex M4, STM32, ESP8266, Arduino, PIC, AVR, Beaglebone Black

Frameworks: Qt5, ROS

Communication protocols MQTT, UART, I2C, SPI, USB

Tools: Yocto Project, Git, Kicad for PCB design, various command-line compilation tools, make, cmake

Documentation Writing technical documents, user guides, reviews

Certifications

- Robotic Software Engineer Nanodegree Term 1 — *Udacity*
- ROS for Beginners: Basics, Motion and OpenCV — *Udemy*
- Embedded Linux kernel & driver development — *Mentor Graphics*
- ARM Cortex M4 microcontroller programming — *Mentor Graphics*
- ARM Assembly Language from Ground Up — *Udemy*
- Introduction to RTOS — *Udemy*
- Beginner to advanced C++ programming — *Udemy*
- Learn advanced C++ programming — *Udemy*
- Modern C++ Concurrency in depth — *Udemy*

Experience

- **Nixplay** — Sheung Wan, Hong Kong
  Embedded Software Engineer — *Jan. 2019 - present*
  - Ported a light-weight UI widgets library to a resource constrained platform for the digital photoframe.
  - Developed a Yocto Linux based platform for digital signage.

- **The Hong Kong Polytechnic University** — Hung Hom, Hong Kong
  Lead Engineer — *Aug. 2017 - Oct. 2018*
  - Developed hardware and software for an IoT based hydroponic farming system.
  - Developed a small size wireless environment sensor board with SMT components and wrote it's firmware.
  - Developed the nutrient level monitoring and auto feed system.
  - Developed the plant imaging system using embedded serial camera and lenses.
  - Developed the firmware for LED based grow lights.
  - Setup a local IoT webserver for data collection and device control.
  - Modified a commercial winekeeper to grow plants inside it.
  - Developed a touch based control panel with UI written in Qt5 to control the winekeeper.

- **Mentor Graphics** Lahore, Pakistan
  Sr. Software Development Engineer *Nov. 2013 - June 2017*
  - Developed customized Embedded Linux using Yocto Project.
  - Developed Yocto Project based Linux BSPs for different reference platforms including iMX6Q and Xilinx Zynq.
  - Debugged and resolved Linux system issues.
  - Became proficient in configuring/patching/compiling the Linux kernel and writing device drivers.
  - Developed the Mentor's multicore AMP framework for booting the Linux and Nucleus RTOS in parallel on separate cores of a multicore ARM processor with a shared memory based communication channel and zerocopy transfer.
  - Contributed in open source community and successfully submitted several patches upstream.
- **East West Infiniti (Pvt) Ltd.** Islamabad, Pakistan
  System Design Engineer *Oct. 2012 - Oct. 2013*
  - Worked on developing an autonomous airboat. Integrated various on-board sensors and wrote the PID based control software for the GPS navigation.
  - Developed the SONAR based sea tide measurement system.
  - Added the wireless connectivity to different products using WiFi, Zigbee and GPRS.
  - Designed electronic circuits and wrote firmware for the company's numerous projects.

Projects

- **Udacity Robotic Software Engineer Term 1:** Image processing using OpenCV, inverse kinematic analysis of a multi-DOF arm, 3D point cloud object detection and classification using SVM algorithm, training neural networks and Fully Convolutional Network based object tracking.
- **Embedded Linux using Yocto Project:** Developed customized Embedded Linux systems for multiple processor boards using Yocto Project. Developed Linux userspace applications, libraries and kernel drivers.
- **Beaglebone Green Roadtest:** Submitted a successful proposal to participate as a reviewer in the Beaglebone Green roadtest program conducted by Element14. As a part of the test, explored creating a robotics development platform based on Beaglebone Green running ROS and the Grove connector system of the Beagleboard Green. Submitted a detailed report on the Element14 community website after completion which has received the highest user rating out of all the submissions in the same program.
- **IoT based hydroponic farming:** Developed the hardware and software for IoT based hydroponic farming system. Wrote RTOS based firmware for custom designed wireless environment sensor, LED control and automatic nutrient monitoring and control system. Setup a local IoT webserver based on ThingsBoard. Also developed the touch control panel for the device based on Qt5 and Linux.
- **Autonomous airboat:** Worked on the development of an airboat including its mechanical assembly and electronics. Integrated on-board electronics and sensors and implemented a PID based control software for GPS navigation. Conducted extensive experimental testing of the boat in a public lake.