



Muhammad Junaid Hashmat

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ABOUT ME

Embedded Systems Engineer with a strong background in Linux-based embedded solutions and hands-on experience in end-to-end build systems and secure-boot processes. Known for my problem-solving approach, collaborative work in Agile environments, and dedication to project quality and precision.

Eligible for EU Blue Card and Visa Sponsorship. Relocation to Germany supported by The Expat Concept. Available immediately

WORK EXPERIENCE

 **EPTECK GMBH** – FAISALABAD, PAKISTAN

EMBEDDED SYSTEMS SOFTWARE DEVELOPER – 01/11/2022 – CURRENT

Build Systems

- Yocto Build system.
 - Bitbake recipes.
 - Customised Linux Image and machine and Distro configurations.
- Board Support Package integration.
 - Device tree for kernel, U-boot and TF-A.
 - Linux Kernel.
 - Bootloaders (TF-A SPL and U-Boot)
 - Customised Board porting on U-boot.
 - Yocto eco-system Update from Kirkstone to Scarthgap release.

Embedded Linux Development:

- Worked mostly on Yocto and embedded Linux. (**Market: Health care/Automotive**).
- Developed and maintained **custom Linux distributions** using **Yocto** for platforms like IMX8MM, IMX95, STM32MP157, Raspberry Pi and Orange Pi.
- Developed a scalable Yocto-based BSP for the NXP i.MX95 and STM32MP157 SoC with integrated secure boot and a robust OTA update framework (RAUC/Hawkbitt), enabling trusted execution, rollback/recovery, and long-term maintainability.
- Implementing security patches for kernel and Bootloader **hardening** and **optimising** configuration for faster boot times.
- Implemented **RAUC** and Hawkbitt for the **OTA update** mechanism (TFA, u-boot, Kernel and Rootfs), enhancing reliability across the system update. Ensured secure updates by integrating **OP-TEE** as a **softTPM** with **PKCS11** support for rauc key and certificate management, ensuring **trusted boot**, **update authentication**, and **integrity verification**.
- HW/SW **co-design/Simulation**: Modified QMEU to work with **TAP** and **USER** network, simulated serial interface with **pty** device using **FTDI** support. Needed this or **Modbus** protocol testing and server communication for a customer application.
- Developed Python-based **commissioning tests** for **automated EOL testing**, **Site Acceptance testing** and **Performance testing** for hardware interfaces (I2C, SPI, UART, GPIOs) and software services, reducing manual testing time and improving consistency across testing processes.
- Worked in an **Agile environment**, participating in sprint planning, daily stand-ups and retrospectives to enhance stream collaboration and project delivery.
- Prepared comprehensive and concise **documentation** like **README** files and **RSTs**, ensuring clarity and transparency in project progress and outcomes, demonstrating design specifications, testing procedures and troubleshooting steps.

Embedded Linux Security:

- Implemented the secure boot functionality and generated proper signatures using **STM32-Key Gen**.
- Defined a proper **chain of trust** where each booted entity verifies the next bootable image by the signature, ensuring **integrity verification** and **trusted boot** and enhancing firmware security.
- Enabled the **OPTEE secure zone** for the STM32MP1-based custom board.

- Generated a complete device tree for OPTEE in the CubeMX and enabled OPTEE-OS in SRAM.
- Bring-up of Infineon's **Trusted Platform Module** (I2C and SPI) for interfacing with the STM32MP device in yocto, modifying the device tree and kernel configurations.

Programming:

- Good knowledge of Shell Scripting, Systemd and Journald.
- Good knowledge of the Python programming Language.
- Good knowledge of the Embedded C programming language.

Extra:

- Proficient in version control system GIT.
- Proficient in using the Agile project management tool JIRA.

EDUCATION AND TRAINING

02/10/2018 – 21/06/2022 Lahore, Pakistan

BS COMPUTER ENGINEERING COMSATS University Islamabad

• Core Engineering Subjects:

- Electric Circuit Analysis, Digital logic Design, Signals and Systems, Computer Organization and Architecture, Principle of Communication Systems, Data Communication and Computer Networks, Control Systems, Digital System Design, Microprocessor Systems and Interfacing.

• Inter-Disciplinary Subjects:

- Programming Fundamentals, Object-oriented Programming, Databases, Operating Systems.

Address 1.5 KM Defence Road, Off Raiwind Road, Lahore, Pakistan | **Website** <https://lahore.comsats.edu.pk/default.aspx> |

Field of study Inter-disciplinary programmes and qualifications involving Information and Communication Technologies (ICTs), Software and applications development and analysis

Thesis Implementing laser engraving algorithm using image processing

LANGUAGE SKILLS

Mother tongue(s): **URDU**

Other language(s):

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken production	Spoken interaction	
ENGLISH	C1	C1	C1	C1	B2
GERMAN	A2	A2	A2	A2	A1
PANJABI; PUNJABI	C1	C1	C1	C1	B2

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user