

AHMET CIHAN AKINCA

Electronics & Embedded Software Engineer | End-to-End Product Development

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PROFILE

- End-to-end electronic product and system development
- Electronic hardware, firmware and application software
- Embedded systems, real-time control and industrial automation
- Instrumentation, measurement and hardware-software integration
- Machine learning, computer vision and edge AI
- Engineering ownership from architecture and design through integration, testing, manufacturing support and deployment

Engineering approach: practical judgement, ownership and delivered results over narrow technology checklists.

SELECTED EXPERIENCE

Electronics & Software Product Development Engineer | Self-Employed / UTEST

September 2024 – Present

- Design, build and deliver complete electronics and software systems for laboratory material-testing equipment.
- Developed a large multi-module TRIAXIAL testing platform with automated workflows, real-time acquisition, calculations, charting, logging and reporting.
- Designed and delivered an Rapid Chloride Permeability Testing hardware system and its complete Qt/C++17 control, monitoring and reporting application.
- Implemented standards-based workflows including ASTM C1202, ASTM C1760, ASTM D4767, NT Build 492 and EN 12390-18.
- Designed and manufactured a custom USB hardware dongle for software licence protection and authentication.

Senior Electronics Engineer | GuardTech Pty Ltd, Melbourne

January 2025 – Present

- Developed 12 embedded devices and prototypes across security, monitoring, RF, power and alarm-display applications.
- Owned complete product development: requirements, component selection, schematic and PCB design, firmware, assembly, enclosure coordination, testing and iterative refinement.
- Developed Qt/C++17 desktop tools for configuration, commissioning, diagnostics, testing and monitoring.

- Integrated custom devices with Inner Range, ICT and Tecom security platforms using serial interfaces, APIs, Ethernet, REST and protocol analysis.
- Delivered RF security products with STM32-class MCUs, sub-GHz radios, rechargeable power systems and USB configuration.

Senior Embedded Systems / Design & R&D Engineer | BILKON Ltd.

June 2005 – September 2024

- Developed embedded firmware, electronic hardware and Qt/C++ applications for industrial control, measurement and automation products.
- Worked across multiple MCU and processor families including 8051, Atmel SAM7, STM32/ARM, NXP i.MX and TI DaVinci platforms.
- Built customised embedded Linux systems using Yocto/OpenEmbedded, including bootloader, kernel, device tree and root filesystem configuration.
- Implemented real-time control and signal-processing solutions including PID, fuzzy-PID, LQR, automatic tuning and digital filtering.
- Delivered systems for material testing, process control, data logging, weighing, medical equipment, motion control and industrial automation.
- Handled field commissioning, troubleshooting, customer-specific adaptation and manufacturing support in addition to design and development.

TECHNICAL STRENGTHS

- **Embedded & Firmware:** C, C++17, bare-metal, FreeRTOS, real-time acquisition/control, hardware abstraction, peripheral integration
- **Electronics & Product Design:** analog/digital design, schematic capture, PCB layout, component sourcing, BOMs, prototype assembly, manufacturing support
- **Software:** Qt/C++17 desktop and embedded applications, Python, engineering tools, device configuration, diagnostics, automated test systems
- **Embedded Linux:** Yocto, OpenEmbedded, Ubuntu, bootloader, kernel, device tree, root filesystem and hardware integration
- **Interfaces & Communications:** Ethernet, TCP/UDP, REST, HTTP/HTTPS, JSON, Modbus RTU, RS-232/422/485, USB, SPI, I2C, USART, RF, Wi-Fi
- **Measurement & Control:** 24-bit ADC systems, DACs, load cells, LVDTs, strain gauges, thermocouples, RTDs, 4–20 mA, 0–10 V, PID/LQR, filtering
- **AI & Computer Vision:** YOLO, OpenCV, ONNX, transfer learning, edge inference, thermal imaging, custom neural-network implementations
- **Engineering Delivery:** architecture, hardware/software partitioning, integration, verification, calibration, commissioning, field troubleshooting

SELECTED PRODUCTS & PROJECTS

- GuardTech security range: Duress Pen, RF Receiver Panel, Power Distribution Board, RF/PIR interfaces, alarm-display and relay products.
- Industrial controllers and instrumentation: TMC742, LC826, ASI210, LPI, VKT845 data logger and B2420 I/O module.
- Thermal-camera edge-AI system using Raspberry Pi CM4, YOLO11n, ONNX and C++/OpenCV inference.
- Custom C++ artificial neural-network library with backpropagation and genetic-algorithm training.
- Rotary inverted pendulum platform combining electronics, sensing, PC software and PID/LQR control.
- Automation systems for compression, tensile, triaxial, direct shear, batching, dosing, packaging and other industrial machinery.

EDUCATION

- **Master of Software Engineering (Advanced, Artificial Intelligence)** — Torrens University, Melbourne, 2026
- **Master of Science in Electrical-Electronics Engineering** — Hacettepe University, 2006
- **Bachelor of Science in Electrical-Electronics Engineering** — Pamukkale University, 2002
- **Bachelor of Arts in Philosophy** — Anadolu University, 2014

TOOLS & OTHER

- STM32CubeIDE, STM32CubeMX, Qt Creator, Keil, IAR, Code Composer Studio, KiCad, EasyEDA, Git, MATLAB/Octave/Scilab, Google Colab
- English: Professional working proficiency | Turkish: Native
- Interested in physics and philosophy