

Nikita Egorov

Embedded Firmware Engineer

egorov.nm.dev@gmail.com | egorovnm.dev

PROFILE

Embedded firmware engineer working at the boundary of ESP32 firmware, external hardware and network services. Experienced in ESP-IDF development, UART/AT and Ethernet diagnostics, safe remote updates, and correlation of device telemetry with Linux-side logs. Earlier work includes electronics prototyping, RF/DSP integration and laboratory automation.

CORE SKILLS

Firmware: C, ESP-IDF, FreeRTOS, ESP32, STM32/AT32, RTOS tasks, timers and peripheral integration

Interfaces and networking: UART, SPI, I2C, I2S, CAN, Ethernet, TCP/IP, MQTT, LTE, AT commands

Diagnostics and tools: Runtime counters, firmware flashing, Python, Bash, Git, Linux logs and lab automation

Hardware and lab: Schematic and PCB design, board bring-up, Altium Designer, measurement equipment, test fixtures

PROFESSIONAL EXPERIENCE

Embedded Firmware Engineer

Intelligent Technical Systems R&D and Production Association | Moscow, Russia | Feb 2026 - Present

- Develop C firmware for ESP32 devices with ESP-IDF and FreeRTOS, including peripheral integration, network communication and target-hardware debugging.
- Investigate intermittent Ethernet/TCP delays with ESP32 diagnostics, network traces and Linux/Jetson logs; prepared OTA confirmation and rollback workflow.
- Integrate LTE modems with ESP32; instrument UART/AT, MQTT/TLS timing, URCs and recovery while analyzing shared access with Jetson/Linux.
- Built Python/Bash tools for firmware flashing, vendor SDK integration, equipment setup and diagnostics.

Circuit Design / Embedded Prototyping Engineer

ITELMA | Moscow, Russia | Jun 2024 - Feb 2026

- Developed Python tools for SIMCom modem and controller flashing/configuration, and PC-side control of laboratory power supplies.
- Supported automotive electronics certification testing through equipment setup, debugging and cross-domain investigation.
- Integrated FM1388 DSP using a test board and adapted vendor code; supported acoustic laboratory tuning.
- Designed and debugged RF and acoustic prototypes, custom boards, fixtures and adapters.

Nikita Egorov

Embedded Firmware Engineer

egorov.nm.dev@gmail.com | egorovnm.dev

EARLIER EXPERIENCE

Electronics Engineer

Research and Testing Center Intelelectron | Moscow, Russia | Mar 2024 - Jun 2024

- Brought up and validated analog and digital components, including ADCs, DACs, MCUs, FPGAs and voltage regulators.
- Developed test methods and analyzed measurements during evaluation of electronic modules and prototypes.

Research Engineer / Teaching Assistant

Yuri Gagarin State Technical University of Saratov and Saratov Branch of Kotelnikov IRE RAS | Saratov, Russia | Aug 2020 - Oct 2023

- Designed analog research circuits, prepared simulations, and analyzed device data in Python and MATLAB.
- Taught practical and laboratory classes for undergraduate engineering students.

SELECTED ENGINEERING PROJECTS

Ethernet / TCP diagnostics - ESP32 + LAN8720 over RMII: diagnostic firmware and cross-device timing analysis for intermittent packet delivery symptoms. Observability improved; no complete root-cause fix is claimed.

LTE modem integration - EC25EU to SLM770A migration: UART/AT, MQTT/TLS diagnostics, timeout and recovery work. AT echo helped identify a transmit-path failure mode; its root cause remains under investigation.

Autonomous ESP32 NTP server - Developed a time synchronization solution for isolated/local infrastructure using Ethernet, IPv4/UDP and NTP.

RF generator prototype - ESP32, SX1278 and VCO-based prototype with schematic/PCB design and PCB antenna modeling.

Acoustic test bench and lab tools - ESP32-based bench control, mechanical prototyping, acoustic lab support, and Python tools for repeatable setup and flashing.

EDUCATION

PhD Candidate in Radiophysics - Yuri Gagarin State Technical University of Saratov | Ongoing

M.Sc. in Infocommunication Technologies and Communication Systems - Yuri Gagarin State Technical University of Saratov | 2023 | Graduated with honors

LANGUAGES

Russian - native | English - B2, working with technical documentation and SDKs