

Arseni Aliakseichyk

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PROFESSIONAL SUMMARY

Embedded & Systems Engineer with hands-on experience in C firmware development (STM32, ESP32-S3, FreeRTOS), real-time IoT platforms, and edge ML inference (ONNX, RPi 5). Currently building CyberGlove — an IoT smart glove with 9-DoF IMU, fiber optic sensors, and WebSocket telemetry. Built robotic control system with GStreamer video pipeline at GlobalLogic Poland in an Agile/SCRUM workflow. Self-hosting 13+ Docker services on Linux VPS.

TECHNICAL SKILLS

Languages: C, Python, Kotlin, Swift, Dart, Bash

Platforms: STM32F4 (ARM Cortex-M4), ESP32/ESP32-S3 (Xtensa), Raspberry Pi 5 (ARM Cortex-A76)

Protocols: MQTT, WebSocket, Bluetooth Low Energy (BLE/NimBLE), SPI, I2C, UART, Wi-Fi, TCP/IP

RTOS & OS: FreeRTOS, Embedded Linux, Ubuntu Server

ML/CV: PyTorch, ONNX Runtime, OpenCV

Networking & DevOps: Docker/Compose, Nginx, WireGuard VPN, CI/CD (GitLab), Certbot (SSL/TLS), UFW, Linux server admin

Frameworks: ESP-IDF, GStreamer, FastAPI, Flutter (BLoC)

Tools: Git, CMake, JTAG, GDB, STM32CubeIDE, Jira (Agile/SCRUM)

Test & Debug: Logic analyzer (LA1010), Oscilloscope, Multimeter, Soldering

EXPERIENCE

Embedded Developer & IoT Intern

Jun 2025 – Oct 2025

GlobalLogic Poland • Koszalin

- Developed C++17 multithreaded motion control system (5 concurrent threads: motor PWM, sensor polling, MQTT listener, video pipeline, API server) for a modular robotic platform on Raspberry Pi 5.
- Architected real-time FPV video streaming pipeline using GStreamer (MJPEG over UDP) with runtime-configurable resolution up to 1080p@60fps.
- Implemented ultrasonic obstacle detection module in C with HC-SR04 sensors, 20 cm threshold, and hysteresis logic for noise rejection — coordinating in a 4-person Agile/SCRUM team with Jira sprint planning.
- Built FastAPI REST API for remote robot control with JWT authentication, containerized with Docker Compose (FastAPI + Mosquitto MQTT + Redis).
- Integrated Hailo AI neural processor for real-time human skeleton detection, enabling autonomous obstacle avoidance on Raspberry Pi 5.

Technologies: C++17, Raspberry Pi 5, GStreamer, MQTT, FastAPI, Docker, CMake, Hailo AI

Software Developer (Freelance)

Oct 2025 – Feb 2026

ChillMove — Fitness Platform

- Engineered kill-resistant Android monitoring system in native Kotlin: Device Owner API with Foreground Service (OOM adj 200), native Firestore sync without Flutter runtime, and 9-layer protection architecture — tested on 3 OEM devices (Xiaomi MIUI, Samsung One UI).
- Implemented native iOS Screen Time monitoring using Swift (Family Controls / DeviceActivityMonitor framework), providing system-level app usage tracking alongside the Android Kotlin implementation.
- Deployed self-hosted notification worker (Node.js 18, Docker) processing 10 event types with locale-aware delivery, exponential retry logic (5 attempts), and automatic FCM token invalidation.

Technologies: Kotlin (Android), Swift (iOS), Device Owner API, Screen Time API, Foreground Service, WorkManager, Docker, Firebase

EDUCATION

Pomeranian University (Uniwersytet Pomorski w Słupsku)

Oct 2023 – Feb 2027 (Expected)

B.Eng. Computer Science — Programming in Engineering • GPA: 4.5 / 5.0

Relevant Coursework: Embedded Systems, Computer Architecture, Operating Systems, Software Engineering, Algorithms & Data Structures, Databases

PROJECTS

CyberGlove — IoT Smart Glove Platform

Personal • 2025 – Present

IoT wearable for gesture control (in active development): ESP32-S3 firmware (C, ESP-IDF) with ICM-20948 9-DoF IMU over SPI, custom fiber optic bend sensor via ADC, and real-time WebSocket telemetry streaming at 50 Hz to web dashboard. Wi-Fi STA with automatic reconnection.

Technologies: C, ESP-IDF, FreeRTOS, SPI, ADC, ICM-20948, WebSocket, Wi-Fi

STM32 Peripheral Firmware Development

Personal • 2024–2025

Firmware on STM32F407VGT6 (ARM Cortex-M4, Discovery board) using both HAL library and direct register access: GPIO, timer-based PWM generation, NVIC interrupt handling, SPI/I2C/UART peripheral communication, and ADC/DAC analog signal processing. Debugging with LA1010 logic analyzer and oscilloscope via JTAG/GDB.

Technologies: C, STM32 (ARM Cortex-M4), HAL/CMSIS, SPI, I2C, UART, ADC/DAC, NVIC

Real-Time Shape & Symbol Classifier

Academic • 2025

Full ML pipeline: PyTorch training (MobileNetV3, 80 classes) → ONNX export → edge inference on Raspberry Pi 5 at 25–30 FPS (640×480). Custom SPI LCD driver (ST7735S, RGB565) and HTTP dashboard for live classification stats.

Technologies: Python, PyTorch, ONNX Runtime, OpenCV, RPi 5, SPI, libgpiod

ESP32 IoT Embedded Projects

Academic • 2024–2025

Three projects on ESP32 (ESP-IDF/FreeRTOS): BLE gamepad monitor with NimBLE and SPI LCD, Firebase REST message display, and NTP clock with deep sleep power management.

Technologies: C, ESP-IDF, FreeRTOS, BLE (NimBLE), SPI, Firebase, Deep Sleep

Production VPS Infrastructure

Personal • 2024 – Present

Ubuntu VPS hosting 13+ containerized services across 4 domains (2+ years continuous operation): Nginx reverse proxy, WireGuard VPN, Docker Compose.

Technologies: Docker/Compose, Nginx, Linux (Ubuntu), WireGuard, Certbot, UFW

LANGUAGES

English: B2 (Upper-Intermediate) • **Polish:** B1–B2 (Intermediate) • **Belarusian:** Native • **Russian:** C1 (Advanced)

SIDE PROJECTS

ChillMove App — Cross-platform Flutter fitness app (BLoC, Firebase, GoRouter), production release with Firestore sync and push notifications.

AstraBot — Discord music & management bot (Python, discord.py, yt-dlp/FFmpeg), deployed in production with ticket system.

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