

Karol Budzyn | Cyber-Physical Systems & OT Security | Aspiring Cryptographic Architect

Warsaw, Poland

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Professional Profile

Part-time student (ARICS @ PW) specializing in the security of **Critical Infrastructure and Operational Technology (OT)**. Expertise in bridging the gap between high-level software integrations and low-level industrial hardware. Currently focused on **Cryptographic Agility** and the transition to Post-Quantum standards in both government and industrial data environments.

Professional Experience

Warsaw/Remote

Technical Consultant | Freelance

Aug 2025 – Present

- **Government Systems Integration:** Developed secure middleware for governmental data exchange, ensuring compliance with strict authentication and data integrity protocols.
- **Database Architecture:** Designed and optimized relational databases for high-concurrency environments, focusing on encryption-at-rest and secure access control.
- **Full-Stack Security:** Built custom web applications with a focus on mitigating OWASP Top 10 vulnerabilities and implementing robust API security.

KBA Automatic Sp. z o.o.

PLC Systems Engineer | Security

May 2024 – Aug 2025

- **Secure Commissioning:** Performed onsite commissioning for large-scale industrial zones, ensuring code integrity and secure communication between OT nodes.
- **OT/IT Convergence:** Managed protocol translation (Profinet/EthernetIP/Modbus) and network segmentation to isolate critical production assets.

Turck Sp. z o.o.

Technical Intern (OT Security)

2023

- **ATEX Diagnostics:** Programmed devices for explosive atmospheres, emphasizing "security-by-design" in high-risk physical environments.

Education

B.Eng. Automation & Robotics w Industrial Computer Science

Warsaw University of Technology

2024 – Present

Focus: Industrial Computer Science and Networked Control Systems.

Mechatronics Technician

ZSEI Tadeusza Kościuszki

2020 – 2024

Accelerated path (skipped one grade).

Security & Data Projects

Gov-Integration: Successfully implemented API connectors for government databases, handling sensitive citizen/infrastructure data with an emphasis on **Cryptographic Agility** for future-proof security.

Vision Security: Developed a depth-camera classification system with **out-of-distribution (OOD) detection** to identify potential data injection or sensor tampering.

H&M Hub Integration: Managed integration for a major European hub, validating logic via offline commissioning to reduce the attack surface of the production environment.

Certifications & Technical Skills

Certifications: **Microsoft:** AZ-500 (Azure Security Engineer), AZ-900 | **CompTIA:** Security+ | **Other:** Niebezpiecznik (Cybersecurity in Company)

Cyber & OT: Protocols: Modbus, Profinet, EthernetIP, IEC 61131-3 (PLC) | **Security:** Network Segmentation, Encryption-at-rest, API Security, Linux/Windows/macOS Hardening.

Languages/Stack: Dev: C++, Rust, Python, SQL, JavaScript/React | **Ops:** Linux & Windows Server Management.

Languages: English (C2), Polish (Native), German (A2), Spanish (A1), Russian (A2), Chinese (A1), Swedish (A2)