Roman Nečas

+421 919 407 379 | roman@necas.me | necas.me | linkedin.com/in/roman-necas | git.necas.me/roman.necas

Education

Brno University of Technology – Faculty of Information Technology Brno, CZ
Bachelor of Information Technology (expected Jun. 2026) *Sep. 2023 – Present*

- Bachelor's thesis: Detection of AI-generated videos

Gymnázium Ladislava Novomeského Senica, SK
Computer Science specialisation *Sep. 2015 – May 2023*

- School-leaving exam in Computer Science and Mathematics, both passed with grade 1 (highest)

Projects

Encrypted ICMP Covert Channel | *C, OpenSSL (AES), raw sockets, Linux* 2025

- Built a client/server tool in C that exfiltrates arbitrary files through a covert channel hidden inside ICMP/ICMPv6 Echo-Request/Reply packets, with AES encryption over raw sockets.
- Designed a custom transport protocol on top of ICMP for file segmentation, metadata handling, and integrity verification.

Secured SOHO Network | *Docker, Traefik, WireGuard, Authentik, Mailu, AdGuard* 2025

- Built and secured a complete small-office / home-office network on a single VPS: router with NAT, Traefik reverse proxy with TLS, AdGuard DNS, Mailu mail server, WireGuard VPN, and Authentik AAA for centralised SSO across services.

Interpreter | *Python 3.11, Lark, PHP 8, XML, OOP* 2025

- Implemented a two-stage pipeline for a custom object-oriented language: a Python front-end using Lark for lexical/syntactic analysis, emitting an XML AST after static semantic checks.
- Developed the back-end interpreter in PHP 8 with an OOP design split across *Model / Expression / Statement / Values* namespaces – classes, methods, blocks, message-passing semantics, and runtime object model.

Winery Management System | *Laravel 12, PHP 8.2, Tailwind CSS, Vite, MySQL, Docker* 2025

- Built a full-stack web application for winery management and e-shop, with role-based access control via Laravel Policies.

ESP32 Heart-Rate Monitor | *C, ESP-IDF, FreeRTOS, PulseSensor, I^2C OLED* 2025

- Built an embedded system measuring heart rate via photoplethysmography: ADC sampling on a hardware timer, Kalman-filtered signal, active threshold-crossing beat detector, and live OLED output.

Technical Skills

Languages: C, C++, Python, Java, JavaScript (Node.js), PHP, Bash, SQL, VHDL, Assembly, LaTeX
Frameworks / Libraries: Laravel, Lark, JavaFX, JUnit, ESP-IDF, FreeRTOS, SIMLIB, PyTorch, torchvision, scikit-learn, NumPy, OpenCV
Infrastructure / DevOps: Docker, Docker Compose, Linux (Debian/Ubuntu)
Security / Networking: Raw sockets, Wireshark, OpenSSL, VPN, SSO, SIP/VoIP
Databases / Web: MySQL, Oracle SQL (PL/SQL, triggers, procedures), Tailwind CSS, Vite
Tools: Git, GDB, Valgrind, Make/CMake, Maven, Composer
Spoken: Slovak (native), Czech (fluent), English (fluent), German(basics)
Interests: Cybersecurity, space, aerospace, engineering, science, self-hosted infrastructure