Alex Morozko

+374 (91) 000 253 aaan.morozko01@gmail.com github.com/ol-aaarozko

Education

Saint Petersburg State University July 2023
Bachelor of Software and Administration of Information Systems
GPA: 4.72 out of 5

Experience

Software Engineer, Ark networks – Yerevan, Armenia Oct 2022 – Present

- Expanded RNIC test coverage **by 50%** by implementing test cases using InfiniBand Verbs API
- Collaborated with a 30-member industrial team in improving a proprietary distributed multi-threaded HW NIC verification system written in C and Bash
- Augmented the expectation subsystem to validate VirtIO-Net packet receive filtering features

Embedded Software Engineer, OKTET Labs – Saint Petersburg, Russia Oct 2019 – Oct 2022

- Accelerated auxiliary kernel loading on Wi-Fi routers **by 65%** by migrating firmware loading code from user space to a kernel thread
- Designed and implemented API for using the serial port device file before mounting a root filesystem
- Accelerated OpenOnload fuzzing **by 50x times** using memory snapshots fuzzing technique
- Discovered one critical bug in an open-source user-level network stack **OpenOnload** by utilizing fuzzing
- Developed a Linux kernel module to store serial device logs from the start of the system, which allowed to identify **three unaddressed kernel crashes**
- Maintained LED subsystem in U-Boot for diverse Wi-Fi router models, enabling LED control within U-Boot

Projects

Nyx-Net contribution github.com/nyx-fuzz/packer/pull/23

- Extended an open-source fuzzer Nyx-Net with the capability of fuzzing socket API-intercepting libraries by implementing real network mode
- Accelerated OpenOnload fuzzing speed by **50x times** using extended Nyx-Net

AFLNet contribution github.com/aflnet/aflnet/pull/70

- Extended an open-source fuzzer AFLNet, allowing it to fuzz applications in a separate network namespace
- **Discovered one critical bug** in an OpenOnload application accelerator by fuzzing it with AFLNet

PCAP Parser github.com/ol-imorozko/pcap-parser

- Developed a C++ PCAP parser for a subset of the SPECTRA SIMBA public market data feed
- Employed design patterns for easily extendable and flexible code, enabling seamless integration with future updates and protocols

Exec-on-board tool github.com/ol-imorozko/exec-on-board

- Developed a single-binary Telnet client + TFTP server to facilitate work with embedded devices

Achievements

Russian National Olympiad in Informatics – Semi-Finals Winner Mar 2019

- Semi-finals of the largest computer science competition for high school students in Russia
- 62nd place out of more than 18000 participants

Skills

Languages: C, C++, Bash, Python, OCaml, SQL
Technologies: RDMA, Fuzzing, Networking, TCP/IP, Kernel Bypass, Git, Make