

memory heap / cv

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1 Introduction



My name is Artyom V. Poptsov, I also known as "avp".

I'm creative, self-motivated and hard-working; atheist and skeptic, very interested in science. I enjoy learning of well-designed technologies and gaining deep knowledge in things I'm doing. Looking for jobs and opportunities that benefit society and make people's lives better.

Heavily involved in free/libre software development, working on my own free software projects in my spare time.

Main technical interests: programming, functional programming, Lisp, GNU/Linux, free/libre software, operating systems, microkernel-based operating systems, distributed/decentralized systems, text processing, parsers, finite-state machines, compilers.

Co-founder of CADR hackerspace: <https://cadrspace.ru>

1.1 Contacts

- Home page: <https://memory-heap.org/~avp/>
- Source code repositories: GitHub, GitLab, Codeberg
- Email: poptsov.artiom-AT-gmail.com (replace -AT- with @.)
- Delta.Chat

2 Experience

- 2011-2014: Software designer @ MERA.
- 2014-2016: Software designer @ El-Sys.
- 2013-present: Free software hacker.
- 2017-2026: CTO @ AZ Company Group LLC
- 2017-2025: Head of "MCU and microprocessor systems programming laboratory" and 3D-printing lab @ Nizhniy Novgorod Technical Colledge.
- 2025-present: Teacher @ Nizhniy Novgorod Technical Colledge.

3 Technical Skills

3.1 Operating Systems

3.1.1 GNU/Linux

knowledge-level: master
experience: more than 13 years
active-skill?: yes

Userspace programs and kernel drivers development, administration, debugging, kernel configuration and compilation.

CLI tools: `sed`, `awk`, `grep`, `find`, `rsync`, ssh tunneling, `screen` etc.

Technologies: LVM, mdadm, rsnapshot, SystemD, AppArmor, buildroot.

- source-based: Gentoo (for several years it was my main desktop/server and development system), Gentoo Hardened, GNU Guix.

- deb-based: Ubuntu (regular use as desktop/development system), Debian.
- rpm-based: Fedora (also have an experience with preparing of RPM-packages), ALT Linux.

3.1.2 GNU Guix

experience: more than 4 years
 knowledge-level: good
 active-skill?: yes

<https://guix.gnu.org/>

User, contributor. My Guile-SSH library is used in GNU Guix for distributed compilation and systems deployment.

3.1.3 Android

experience: more than 1 year
 knowledge-level: basic
 active-skill?: yes

Application development in Java, debugging with ADB. Took a part in RT Android project at MERA.

Taught classes on Android development for students in a college.

Projects:

- RecBot: Automatic remote-controlled multiple camera recorder for Android.

3.1.4 GNU Hurd (a microkernel-based OS)

experience: less than 1 year
 knowledge-level: basic
 active-skill?: no

Tinkered with it, tried to write a translator (server) for the system.

- deb-based: Debian GNU/Hurd

3.1.5 Xenomai

experience: less than 1 year
knowledge-level: basic
active-skill?: no

Worked with Xenomai during my involvement in RT Android project at MERA.

3.1.6 RT GNU/Linux

experience: less than 1 year
knowledge-level: basic
active-skill?: no

Worked with RT Linux patches during my involvement in RT Android project at MERA.

3.1.7 Microsoft Windows (98, XP, ...)

experience: more than 4 years
knowledge-level: basic
active-skill?: no

3.2 Platforms

3.2.1 Architectures

1. x86, x86_64 I have experience in programming for those platforms on several languages. Also I have experience in building and maintaining computers and servers.
2. RISC-V
 - I'm tinkering with StarFive VisionFive2: installed an official Debian image on it; also created a patch series in 2025 (which was successfully merged into the upstream) for GNU Guix to create a better image for the board.
 - CH32V003 programming (C, Assembly.)
 - Also I've built PC based on Milk-V Jupiter, Spacemit M1/K1 Octa-core RVA22 RVV1.0 RISC-V SoC, 2TOPS Mini-ITX. I'm planning to run GNU Guix on it.

3.2.2 Hardware

1. Arduino (AVR Family)

knowledge-level: master
experience: more than 5 years
active-skill?: yes

2. STM32

knowledge-level: good
experience: more than 1 year
active-skill?: yes

STM32F103, STM32F407, STM32H750IBK6.

3. CH32V003

knowledge-level: basic
experience: less than 1 year
active-skill?: yes

4. ESP8266 / ESP32

knowledge-level: good
experience: more than 3 years
active-skill?: yes

5. Raspberry Pi

knowledge-level: good
experience: more than 2 years
active-skill?: no

Kernel compilation, GPIOs, etc.

3.3 Programming Languages

3.3.1 C

knowledge-level: master
experience: more than 13 years
active-skill?: yes

Client-server applications, libraries, Linux kernel drivers development.

Contributions to libssh library.

Project examples:

- Guile-SSH: GNU Guile libssh bindings.
- Guile-Udev: GNU Guile libudev bindings.

Also I started a free online course on system programming (in Russian):

https://www.youtube.com/playlist?list=PLoAJ3BxlddnopWsE_IQYkFYXUkmYA4-Ar

3.3.2 C++

knowledge-level: good

experience: more than 4 years

active-skill?: yes

Qt, Arduino.

Examples:

- MST: Multi-seat toolkit that allows to make multi-seat configurations.
- Azbook: Generic authentication and file synchronization system for WebDAV servers.
- yggtray: A system tray application written in Qt for managing Yggdrasil mesh networking service (contributor.)

3.3.3 Scheme

knowledge-level: master

experience: more than 12 years

active-skill?: yes

Examples:

- Guile-SSH: GNU Guile libssh bindings.
- Guile-SMC: GNU Guile State Machine Compiler.
- Guile-DSV: GNU Guile DSV/CSV format parser.
- Guile-PNG: Portable Network Graphics (PNG) library for GNU Guile.
- Guile-INI: GNU Guile INI Format parser.
- Guile-Deck: GNU Guile Matrix client.
- Metabash: Distributed pipes for GNU Guile.

3.3.4 Java

knowledge-level: good
experience: more than 6 years
active-skill?: yes

Overview:

- Android application development. JNI.
- Alfresco module development.
- Teaching object-oriented programming course in Java for students in NNTC.

Examples:

- <https://sourceforge.net/projects/clustergen/>
- <https://gitlab.com/gkaz/recbot>

3.3.5 Unix shell scripts

experience: more than 10 years
knowledge-level: master
active-skill?: yes

Bash, CShell

I participated in a commercial Bash/system administration course development for "BaseALT" LLC.

3.3.6 JavaScript

knowledge-level: good
experience: more than 2 years
active-skill?: yes

3.3.7 Emacs Lisp

knowledge-level: basic
experience: more than 10 years
active-skill?: yes

3.3.8 Ruby

experience: more than 10 years
knowledge-level: basic
active-skill?: no

System automatisaton, basic web application development.

3.3.9 Python

experience: more than 6 months
knowledge-level: basic
active-skill?: yes

Experience:

- Development of an extension for MoinMoin wiki engine.
- Teaching a beginner Python course for students in a college.

Examples:

- MoinMoin Abbreviation Parser
- Contributed a patch to FreeCAD.

3.3.10 AVR Assembly

knowledge-level: basic
experience: less than 6 months
active-skill?: no

Examples:

- "Chasing lights" in AVR Assembly.
- "AVR assembly with AVP" series on YouTube.

3.3.11 RISC-V Assembly

knowledge-level: basic
experience: less than 1 year
active-skill?: yes

- CH32V003 assembly programming.
- Tinkering with StarFive VisionFive2 board.

3.3.12 Lua

knowledge-level: basic
experience: less than 1 year
active-skill?: no

3.4 Frameworks

3.4.1 Qt

knowledge-level: good
experience: more than 3 years
active-skill?: yes

Examples:

- MST: Multi-seat toolkit that allows to make multi-seat configurations.

3.4.2 Ruby On Rails

knowledge-level: basic
experience: less than 1 years
active-skill?: no

3.5 Markup Languages

Emacs org-mode, Texinfo, HTML, Wiki syntax, Markdown, L^AT_EX.

Texinfo examples:

- Guile-SSH documentation

3.6 Software Testing

- GitLab/GitHub CI
- JUnit, Check.
- SRFI-64 (a testing framework for Scheme.)

3.7 Administration

3.7.1 Docker

knowledge-level: good
experience: more than 2 years
active-skill?: yes

- Dockerfile
- Docker Hub
- Docker Compose

3.7.2 Kubernetes

knowledge-level: basic
experience: less than 2 years
active-skill?: no

- k8s

3.7.3 LVM

experience: more than 2 years
knowledge-level: basic
active-skill?: yes

3.7.4 AppArmor

knowledge-level: basic
experience: less than 1 year
active-skill?: no

3.7.5 SELinux

knowledge-level: basic
experience: less than 1 year
active-skill?: no

3.7.6 Cron

3.7.7 Init Scripts (openrc, System V, upstart)

3.7.8 SystemD

3.8 Network Protocols

SSH, TCP/IP family, ONC RPC, SCTP, CoAP, WebSocket, MQTT.

3.9 File Formats/Standards

3.9.1 CSV / DSV (Unix-style / RFC 4180)

- Related projects: Guile-DSV.

3.9.2 iCalendar (RFC 5545) / vCard (RFC 6350)

- Related projects: Guile-ICS.

3.9.3 Portable Network Format (PNG)

- Related projects: Guile-PNG.

3.9.4 INI

- Related projects: Guile-INI.

3.10 Server-Side Software

3.10.1 Web Servers

lighttpd, apache, nginx.

3.10.2 Wiki

- MediaWiki – administration, maintenance, usage (I used to write some articles for Wikipedia.)
- MoinMoin – administration, maintenance, usage.

3.10.3 Git Servers

- GitLab (deployment, maintenance, interaction with the API.)
- Gitolite

3.10.4 "Cloud" Software

1. ownCloud

experience: more than 1 year
knowledge-level: basic
active-skill?: no

Deployment, maintenance, interaction with the API.

2. NextCloud

knowledge-level: good
experience: more than 3 years
active-skill?: yes

Deployment, maintenance, interaction with the API.

3. FreedomBox

knowledge-level: good
experience: more than 5 years
active-skill?: yes

3.11 Telecommunication software

3.11.1 Jitsi

experience: more than 2 years
knowledge-level: good
active-skill?: yes

- Deployment in a production environment.
- Maintenance.
- Monitoring.
- Patching.

3.12 Learning Management Systems (LMS)

3.12.1 Moodle

knowledge-level: good
experience: more than 4 years
active-skill?: yes

- Maintenance.
- Integration with other services.
- Course/test development, daily usage.

3.13 Security

3.13.1 GNU Privacy Guard

experience: more than 5 years
knowledge-level: basic
active-skill?: yes

Use GPG for email communications and to sign software releases.
GPG Key: D0C2 EAC1 3310 822D 98DE B57C E9C5 A2D9 0898 A02F

3.13.2 Off-the-record (OTR) messaging

knowledge-level: basic
experience: more than 6 months
active-skill?: no

3.13.3 Let's Encrypt

experience: more than 1 year
knowledge-level: basic
active-skill?: yes

Home and production use.

3.14 Development and Build Tools

Git/RCS/SVN, GNU Make, GNU Autotools (Automake, Autoconf, Libtool),
scons, GDB/DDD, **strace**, GNU Emacs, NetBeans, Eclipse, distcc.

Gave a talk in 2015 on version control systems for students of NNTC.
Slides: <https://github.com/artiom-poptsov/talks/tree/master/vcs>

3.15 Embedded Development/MCU Firmware Development

3.15.1 Tools

1. OpenOCD

knowledge-level: basic
experience: less than 1 year
active-skill?: no

3.15.2 Buses

1. Serial

knowledge-level: basic
experience: more than 4 years
active-skill?: yes

2. I2C

knowledge-level: basic
experience: more than 3 years
active-skill?: yes

3.16 Parametric 3D modeling

experience: more than 3 years
knowledge-level: good
active-skill?: yes

I'm mostly using FreeCAD nowadays. Some of my works can be found here:
https://www.thingiverse.com/a_v_p/designs

3.17 3D-printing

I have experience in:

- Building, maintaining and using 3D-printers (RepRap and alike.)
- Preparing 3D-models for printing.

3.18 Other

- Good knowledge of Linux kernel standards and GNU coding standards.
- Experience of interaction with free software community. Contributions to:
 - GNU Guix (list)
 - GNU Guile-RPC
 - libssh (list)
 - FreeCAD (list)
- Backus-Naur Form (BNF), ABNF
- Gnuplot

3.19 Licenses

I have basic understanding of the following licenses:

- Creative Commons
- GNU GPLv3

4 Writing Skills

4.1 Science, Programming, Art and Radio-electronics Club (SPARC) book

An open-source book (CC-BY-SA 4.0) I'm working on. The book is written in \LaTeX and published on GitHub. Also the book is in the GNU Guix official repository.

5 Languages

5.1 Russian

Native speaker.

5.2 English

Good reading/writing skills (technical documentation as well as regular texts such as articles or books, communication through email and IM). Basic verbal skills (I have experience in verbal communication with non-native English speakers), very good understanding of spoken English.

Examples of technical documentation written by me:

- Guile-SSH documentation

5.3 German

Very basic reading/writing skills.

5.4 Norwegian

Very basic reading skills.

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