Jack Halford

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Education

42 programming school - Paris

08/2016–Present

- C, Rust
- well versed in POSIX/UNIX philosophy
- x86, IA-32
- exposure to linux development
- tcp/ip, client/server basics
- while at 42 I rewrote the following : `libc`, `bash`, `malloc`, `printf`, `nmap`, `ping`, `traceroute`, `ftp`

ENS Cachan - B.Sc. physics

09/2015–06/2016

- Quantum mechanics
- Special relativity
- Statistical physics
- Computational physics (`fortran, python`)
- Mathematics : complex analysis, hilbertian algebra
- Experimental physics : optics, analog electronics, lasers

2 year preparatory course (PTSI - PT)

09/2013–06/2015

- Mechanical engineering basics
- Automatic control theory, signal processing
- Classical physics
- Mathematics (real analysis, linear algebra, discrete probability)

Work experience (3 previous interships)

Gandi.net, Paris – Systems developer

09/2018–present

- Internship in the "hosting squad", managing iaas (xen) and paas (lxc, cgroup) offerings alongside large scale storage infrastructure (zfs, nfs, iscsi) over 4 data centers.
- Design and implementation FreeBSD syscalls : per-thread credential management and new VFS syscalls for a userspace fileserver (nfs-ganesha).
  (see `https://reviews.freebsd.org/rS341689`)
- Setup and maintenance of a FreeBSD CI platform for the nfs-ganesha project (the existing CIs maintained by CEA and Redhat were linux based).

Tempow (startup) – Paris

04/2017–09/2017

- Development of custom a bluetooth stack for connecting and synchronizing multiple speakers together. Integration of the modified stack in android at the OS level
- Ported the android bluetooth stack to `arm64-linux` for benchmarking on raspberry pi
- Succesfully helped pitching the product at `CES Asia` (Shanghai - mai 2017) and `MWCA` (San Francisco - sep 2017)

IMPMC - Université Paris 6 Jussieu

05/2015–06/2015

- 5 week intership in a solid state physics lab
- Tight-binding modeling of rhombohedral graphene to study electornic properties (superconductivity) under exotic conditions (high temperature/pressure)
- Introduction to fortran's `lapack/blas` libraries to produce high performance code

Projects

Posix shell Leading a team of 5 students to develop a fully fledged shell in C, including shell scripting, job control. Next to development, I am responsible for management of the team.

Coilgun Built a coilgun as an undegraduate project, alongside a complete simulation in `Matlab Simulink` to adjust parameters to optimise efficiency. Final version shot 50g steel bullets at 120km/h

x86 kernel Wrote a kernel from scratch in Rust targeting the `i386` architecture. I'm responsible for implementing paging, interruptions, x86 devices and hardware multitasking. I'm still learning and development is ongoing (paused) as a project for 42.

Media Homeserver Maintainenance of a media homeserver for family and friends, a 6To film library for ~15 users. I've often used this as an excuse to try out technologies I'm interested in such as `docker`, `zfs`, `prometheus` etc...

Skills

Programming solid knowledge of C, shell scripting and python, working knowledge of rust and golang

Hardware accustomed to x86 and devices (pic, pit, mmu), adaptable and willing to work with new architectures and OSes

OSes some experience with both Linux and FreeBSD as fileservers, virtuazation servers and routers.

Networking good knowledge of tcp/udp/ip development and the client server model (wrote an RFC compliant ftp client and server).

Interests virtualization : xen, kvm, virtio, firecracker, storage : ceph, zfs

Code quality healthy habits regarding coding conventions, documentation and testing, experience with software development at scale

Languages fluent in english and french