

# Pierre-Hugues Husson

## Work experience

2020– **Staff Software engineer**, *Freebox*, Paris

- Lead a team of two
- Responsible for long-term maintainance & deployment (security, partners, Google cert)
- Lots of bug fixes. Areas:
  - Always-on micro-controller (power consumption, alarms)
  - Rewrote Audio HAL from scratch
  - Android java frameworks
  - Kernel drivers (CEC, WiFi, HDR, AVB, Ethernet, i2c, HDCP...)
  - Bootloader (security, refurbishing)
- Migrated from ODM-led work-tree, to Freebox-led work-tree
- Exoplayer implementation of proprietary RTSP with Widevine DRM
- Re-wrote a Widevine Trusted Application
- Software evaluation of STB SoC vendors
- PoC Ported Android 14 and Linux 6.6 on Broadcom Android 7/Linux 3.14 drivers
- Low-RAM optimizations for Android 7 platform
- Implemented IR learning for remote control
- Project management with ODM (SEI Robotics)
- Re-wrote a FTA DVB-T TVInputService with ExoPlayer using Linux-DVB driver
- Linux mainline contributions to better support our products
- Collect anonymous statistics (backend, on-device collector and dashboard)
- RMA-specific software
- Prototype LLM-based voice assistant
  - End-to-end PoC
  - Evaluation of ASR providers
  - Experimentations with search database (text & semantic)
  - PoC backend (python, flask)
  - Integration with legacy Nuance-based protocol
  - Conversational near-field (modification of RCU for conversational)
  - Voice UX mock-ups (audio fillers, interruptions...)
- AI model for speech improvement on TV broadcasts
  - Study the state of the art research
  - Integration of 3P catalogues
  - Discussing requirements with 3P
  - Adapt model to run on 1 core Cortex-A53 (Target: 2019 STB, no NPU, poor GPU)
  - Integration into Android audio flinger
  - UI implementation, following product team's guidelines

- 2018–2020 **Software engineer, kickstarting Android**, *Softathome*, Colombes, Paris Area
- Android firmware/apps CI
  - Android TV Generic System Image PoC (8 SoCs vendors)
    - 8 SoC vendors (STBs, tablets and smartphones for all-in-one demos)
    - Demo of Android 9 and Android 10, 2 weeks after their source code release
  - Android-stack tv player (ExoPlayer-based)
    - Partial HbbTV support (upstream part)
    - Improved SmoothStreaming support
    - Viaccess DRM integration
    - DVB/multicast support (DVB-T, DVB-SI, CAS...)
    - Seamless ad-insertion prototype
    - Faster time-to-zap optimizations (down to 120ms on multicast IPTV, 200ms on OTT)
  - Android metrics analysis
  - Development-focused userspace bootloader based on kexec
    - Automatically boots either latest revision or CI-controlled revision
    - Boot over network
  - CI for Softathome's Linux-based STB software solution
    - Optimization of build time (2 hours  $\rightarrow$  13 minutes)
    - Integration of Gitlab and Jenkins into Softathome's build system
    - Automatic integration test run on STBs at every merge-request
  - Android platforms security analysis
    - Reported Amlogic STB security flaw ranked High in Android security bulletin
    - Reported two Broadcom STB security flaws ranked High
    - Discussions with DRM/CAS provider to help them improve their security, and Android compatibility
  - Rust implementation of RTP multicast receiver, including FEC and FCC support
- 2016–2017 **Lead software engineer**, *Archos*, Igny, Paris Area
- Manage B2B customer technical relationship and development
  - Drive and train engineer team in Archos Shenzhen
  - Manage a team of 4 engineers in France
  - Manage remotely a team of 4 in Shenzhen
  - Handle the release, including Google certification, of nearly one new model per week
- 2014–2015 **Software engineer**, *Archos*, Igny, Paris Area
- Certification Android devices for Google services (CTS/GTS)
  - Creation of Android firmware-editing tools
  - Creation of Archos Fusion Storage
  - Development and operation of Archos OTA system
  - Collection and analysis of device statistics (based on ES/Kibana)
  - Development of testing tools and CI (Android firmwares, CTS, GTS, apps, ...)
  - Automatic Android firmware tests
  - CTS/GTS integration
  - List and fixes of known usual problems
  - Continuous build of various Android apps
  - Support of various SoC vendors (TI, Rockchip, Qualcomm, Unisoc, MTK, ...)
  - Early-detection and removal of in-firmware PHAs
  - Binary security patches experiment
  - Contributions to Archos Video Player
    - Audio passthrough support
    - Torrent streaming support
- 2013 **Intern**, *SeQureNet*, Paris
- PCBA conception (schematics, routing)
  - FPGA programming
  - Linux user-space driver for FPGA

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## Voluntary experience

- 2018– **Nova Video Player**, *full-featured Android Video Player, including library*
- CI
  - FDroid integration
  - Torrent support maintainance
  - SFTP stability
  - Full-text search prototypes
- 2022– **TrebleDroid**, *Android Generic System Image*
- Continuation of Phh-Treble as a team
  - Leading & maintaining
- 2017–2022 **Phh-Treble**, *Android Generic System Image*
- Maintaining support for devices originally running Android 8.0 or more recent
  - Vendor-specific workarounds in Android framework
  - Support for vendor-specific features
  - OTA mechanism based on Android 10's dynamic partitions
  - Used as technical basis for 10+ other custom GSIs, including Ubuntu Touch
  - Regular discussions with Google to discuss future of Project Treble
  - Contributions reused across the whole custom ROM community, including LineageOS
- 2015–2017 **phh's SuperUser**, *An SELinux-aware Android super-user*
- 2010–2015 **Rezel voluntary association**, *Telecom ParisTech student house*
- President of the association
- Managing and maintaining the local network (circa. 500 subscribers)
- 2008–2010 **XDandroid**, *Android port to Windows CE-based phones*
- 2010–2011 **Toshiba AC100 opensource support**, *ARM-based laptop*
- NVEC reverse engineering and driver creation (driver mainlined since then)
  - Userspace audio codec driver
- Miscellaneous open-source contributions**
- Linux support of RC5T619 PMIC
  - Bugfixes in Apktool
  - Rockchip ports (mali driver, vtl\_ts, build fixes, codec, ...)
  - DHCP on Android connection-time analysis