

Switching “Le SCRIME” over to Linux as a complete novice

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First steps into the community

SCRIME : Studio for Creation and Research in Computer Science and Experimental Music.

- Created in collaboration with the LaBRI (Bordeaux Computer Science lab) and the Music Conservatory in Bordeaux in 1996.
- Multimedia tools Pioneer, SCRIME played an important role in the development of the *Lemur* control surface and what became the “meta-sequencer” *ossia score*
- Retained until now a “conventional” set of tools consisting mainly of *Cycling 74*, *Max/MSP*, *Avid Pro Tools* and *Cockos Reaper* running on *Apple macOS*

The decision to switch over to Linux was taken at the end of 2017, shortly after the team changed and a Dome of 19.2 speakers for 3D sound rendering was set-up. Even though this task was undertaken by someone new to Linux, the fact that these various changes happened all at once provided the intermission necessary to familiarize with the Linux environment and reevaluate the studio’s main tools.

The community

The *Ubuntu Studio* distribution was chosen as a starting point for the overview of Linux multimedia production it offers, as well as its ease of use. On top of the *Ubuntu* community being very helpful, additional online resources made a real difference during the adjustment period:

- linuxmao.org, a french forum for all things music on Linux, curated by many *LibraZik* contributors as well as *Ubuntu Studio* and *KXStudio* users.



- Echoplex Media echoplexmedia.com, recording studio and podcast providing basic tutorials for *Ubuntu* installation, sound and radio production with Linux audio tools
- Joe Collins ezeelinux.com, very helpful and accessible tutorials and scripts for different distributions.
- Benjamin Caccia bcacciaaudio.com, practical tips and tricks for Linux audio production.
- The Arch Wiki wiki.archlinux.org, for everything else, an ultimate resource if only a little too technical at times for first time Linux users.

If the readily available alternatives to commercial software have yet to find total acceptance with local composers, switching over to Linux proved fruitful when welcoming computer-science students for early 2018 internships. Each either working on our machines or on their preferred *Debian* flavors : these few months were rich in exchange and compatible contributions.

Putting it together

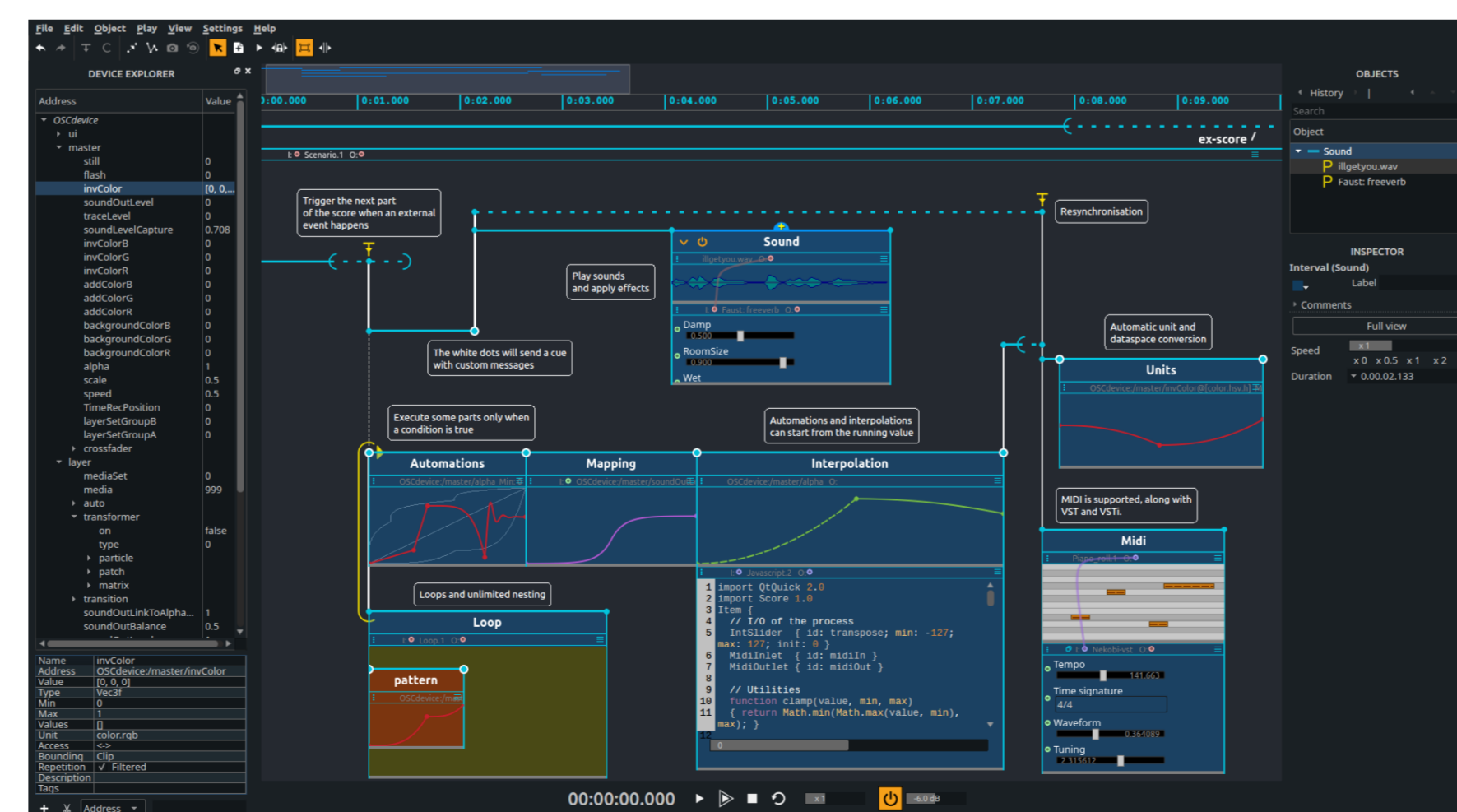
The hardware used is a set of old (2009 - 2013) Mac machines. At the time of the first installation, the latest *Ubuntu Studio* release was 17.04 beta. The ability to start over from scratch and re-install the system quickly proved useful, especially when working with a distribution’s beta release, beta-testing various software and having to replicate the exact same set-up on multiple computers.

- After experimenting with *CloneZilla*, the best solution turned out to be the combination of `apt-clone` (to save and re-install all installed packages) and archives of the home directory compressed with tar. This method offers the comfort to experiment with successive “breakings” and restoring of the configuration. We were able to recover very quickly and identify culprits in scripts installing faulty headers.
- Audible xruns accumulate constantly if Wifi connection isn’t disabled. Broadcom cards seem to be regularly causing CPU interruptions and to this day, no solution have been found. Identifying this issue actually took some time as WiFi seemed a very unexpected source of xruns.

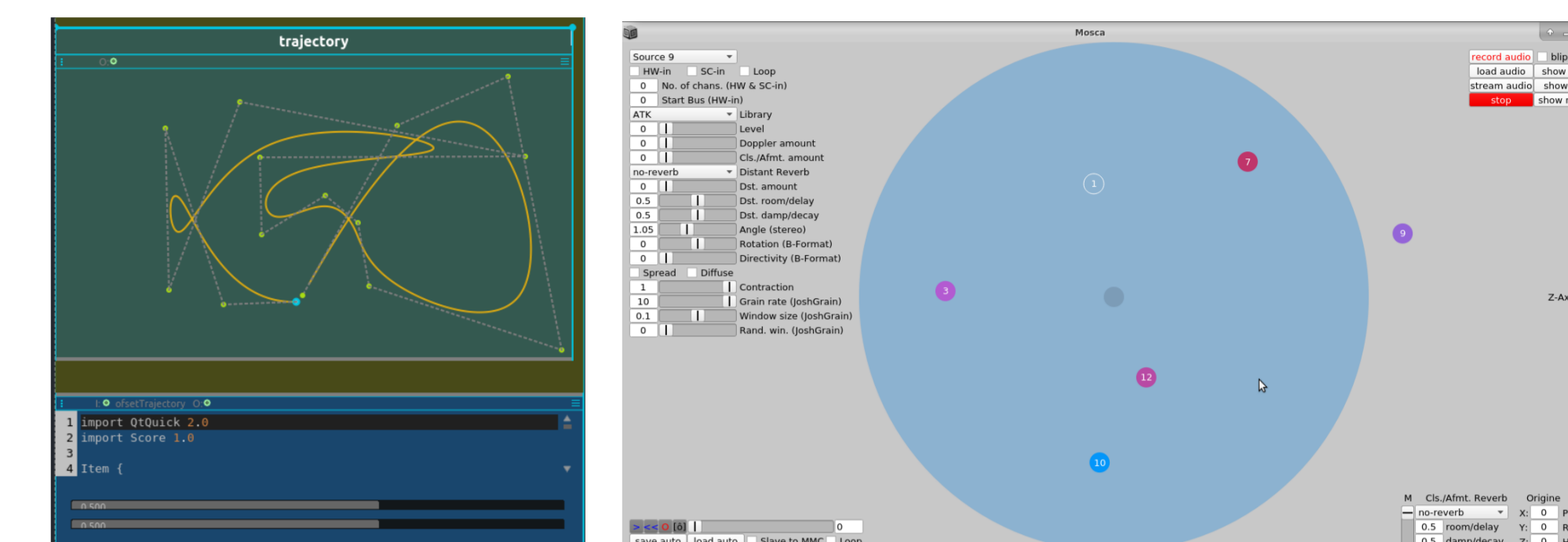
The OSSIA project

OSSIA : Open Software System for Interactive Applications (ossia.io).

- Bindings for a number of open source environment (SuperCollider, Pure Data, OpenFrameworks...).
- Faust, VST and LV2 support.
- OSCQuery, developed in collaboration with VDMX, Vezér and MadMapper, allows for automatic detection of OSC namespaces. Implemented with WebSockets, an OSCQuery server can communicate natively with a web page.
- Scriptable protocols with Javascript: HTTP, WebSockets, Mapper, Serial port.
- Protocols in the works at the moment include Artnet, Wiimote and gamepad support.



The Mosca case



Multimedia production on Linux differs mainly with commercial operating systems by its “decentralized” aspect. Whereas commercial environments attempt to be all-encompassing while remaining closed black boxes, the great number of independent modules and the freedom to have them interact encourages a more specialized and distributed approach.

Further development of the *Mosca* project at SCRIME exemplifies this practice. Initially created by Iain Mott, *Mosca* is a *SuperCollider* class for real time 3D sound processing. It’s many features rely on the interconnection between several different environments:

- ossia score** [2] for interactive sequencing and control
- AmbiDecoderToolBox** [4] for direct rendering on speaker Arrays
- Ardour** [3] for editing and prototyping (connected through MMC)
- Aliki** [1] for creating and editing room impulse responses
- Arduino** for head tracking and control with gesture

Compatibility

- Focusrite, MOTU and RME support with either USB or FireWire
ALSA drivers for MADiFace Pro, Fireface UFX, Scarlett 2i2...
FFADO drivers for 828 Mk2, Ultralight Mk3, Fireface 800...
- Digidesign C24 control through OSCQuery.
- Digidesign 002 and Mbox support (originally restricted *Pro Tools*).



Acknowledgements

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