GeKiPe & Soundpainting master thesis update (January 2020)

Dear Sarah,

In order to facilitate your review and future discussion, here is a brief update regarding my master thesis proposal that I have written in December 2019.

# Contacts

* Robert Lieck at DCML has shown interest in the project and will be able to help me on the topic of defining a machine-understandable soundpainting grammar.
* Sabine Susstrunk and Kim Seungryong (IVRL) are also potential helpers on the topic of ML gesture recognition. Sabine wants me first to make a presentation in February in her lab before she can provide me any resource. The date is to be set in February, when I will be back at EPFL.
* A meeting was canceled in December with Philippe Spiesser (HEM) and Pierre Donat (IRCAM) but we have a skype meeting on Thursday 14 of January to discuss about GeKiPe and my proposal. They seem both enthousiastic.
* I have tried to reach ESTIA researchers (about their recent article on SP gestures recognition), without answer yet. I however thing that collaborating with them could be a constraint and is very optional, since we have all the needed resources at EPFL already.
* Constance Frei is supporting me for this project, and it is not clear what can or would be her role if it is accepted, but her advising is a very important support for me.

# Budget

Although I didn’t write about it in my proposal, there is a budget to be allocated for this project in order to buy the equipment.

Pierre Donat (IRCAM) told me they will be able to send me the gloves sensors as they only have 2 pairs of them.

Therefore, a requirement would be to buy a pair of [RioT cards](https://plux.info/kits/376-bitalino-r-iot-810121007.html) that cost 100€ each and create the gloves myself (rather easy I presume).

Then, I remember you have used a kinect for the KungFu experiment, so I assume having access to one is not a problem (it should be cheap anyway to buy one).

I also assume that all the other equipment needed (screens, speakers etc) is either already in the lab, either easily accessible for me at EPFL.

# Goals of the master thesis

Although I tried to make clear in my proposal what would be the goals of my research, ie. what I aim at delivering at the end of the program and what could go wrong, I have defined this even more precisely when discussing with Constance Frei.

Among other points:

* We have made clearer that the number one, minimal goal is to recognize a few soundpainting gestures of the same nature (for instance, only contents or only instruments). Achieving this already implies that the whole recognition pipeline and the most basic type of grammar (case 1, case 2…) are working.
* The number 2 goal is to implement the recognition of more signs, among which signs of different nature (WHO, WHAT, HOW and WHEN). Of course, implementing at least one sign of each category is a full validation of that goal, which is a full proof of concept as adding new signs will therefore be made easy.
* Goal number 3 would be to implement different soundpainting MODES. This is a lot trickier for several reasons, especially because modes are changing the grammar itself, in other words, they act as grammar changer. Changing from the launch mode to normal mode would already be a big challenge. It seems unlikely that I will be able to go that far.
* Goal number 4 would be finally to create a Unity interface inside a panorama to interact with. Although SP is already one type of “interactivity”, interfaces are another type with their own advantages (choosing an instrument would be made simpler for instance).  
  This interface would also allow video production, which is already implemented in GeKiPe but not in the core of my proposal. Getting there sounds very unrealistic to me, but I like to keep that idea for further research, or in case one group of students from the cultural data sculpting group would like to work on that part?[[1]](#footnote-1)

If possible, the defense would take the following form:

* First, I will start with the beginning of a percussion/musical piece written by myself. The beginning would make use of only the tools that I will have developed for the master thesis. This use case will allow everyone to understand the basic concepts and demonstrate the results in a very explicit and comprehensible way.
* Then, I would explain the core of my research, as a typical defense would do.
* Finally, I would like to end with a second part of the piece, which this time would not only make use of the tools developed in the research program, but would also integrate physical instruments, possibly an other performer and a more complex integration of the tool, in order to explore its complexity and complex uses rather that the simple demonstration that would have been shown in the first part.

1. The idea is the following: the synthesis module is programmable and can make use of sound samples, for instance from cultural databases (recording of instruments, sounds etc). Designing an interface with the same controllers (kinects+gloves) to interact with that dataset would fit my needs and perhaps the needs of the class project. [↑](#footnote-ref-1)