Designing a reprogrammable instrument

Short bio:
Rafaele Andrade [BR/NL] is a music pioneer in the field of modern/experimental music, with a background in conducting, composition, production, cello, live coding, and sonology. She applies this knowledge in her artworks merging the reflection and practice of innovation, technology, social inclusion, sustainability & fair music distribution. Rafaele has a passion for innovative and social initiatives, producing during her young career an orchestra of Brazilian music at 17 years old and at 22, curating a UNESCO project to promote Latin American women composers (Rádio Delas). She is a member of NLCL(Netherlands), iii (Netherlands) and CIM (Brazil) and the designer and creator of Knurl, a reprogrammable, hybrid, recycled and solar-powered cello.

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Knurl:
Knurl, a 'cello' with 16 strings, is a shift into exploring the potential of hybrid instruments (electro-acoustic) to be enhanced through built-in electronic components, as well as the potential for music to be a shared endeavour between performers, global audiences members and its networks. Knurl is solar-powered, reprogrammable (performers and audiences can interact and manipulate) & hybrid cello. Its 4 modes of performance (Synthesis, Detection, Programming & Analogue mode) are installed in a microcontroller in a self-contained electronic circuit, (all the electronic devices are attached to it, including speakers, microphone, microcontroller, solar panels and sensors).

https://www.knurl-lab.in/

Short description of the workshop:
The workshop consists of an investigation of the design and approach of reprogrammable systems in hybrid instruments.
Reprogrammability is a branch of algorithmic composition and live coding music, whereas instead of limiting your ideas and position through the application of fixed systems in softwares, it enhances the flexibility and malleability of musical systems by reapproaching its advantage for digital expansion and redefinition.
In the course of 2 days, the participants will have time to learn the expertise to achieve this concept into their practice but also the opportunity to share their ideas and music in a final presentation of the class. (not confirmed)

What participants will learn:
- Basic knowledge of digital instrument design (archive and electronic)
- Diverse approaches and methodologies of reprogrammability
- The design of electronic circuits to reprogram buttons, sensors & blocks of code
- Map and organize their ideas by a collective analysis of each proposal

Target audience:

- Musicians
- Composers
- Media artists
- Digital artists
- Softwares developers

Level of experience

- Experience with electronic music composition
- Experience or interest to sound objects / instrument
- Experience with a coding language is not obligatory (C++ , Supercollider, Tidal, Java , etc..)

Numbers participants: 12 /15 people

What participants need to bring:

- An musical instrument / sound installation / sound object
- An artistic proposal to 'hybridize' an acoustical instrument / sound body

Outline of the workshop:

	12/09	13/09
12:00	Discussion: Short round introducing yourself & your proposal	Discussion: Project development
13:00	lecture: Introduction to reprogrammability	Lecture: system design, Representation & interaction
13:45	Break	Break + FAQ
14:00	Workshop: Designing reprogrammability into your instrument	Workshop: Applied electronics + hardware
14:45	Conclusion, homework, Insights	Short round mapping their proposals
*20:00 (?)		Presentations + Demo
18:00 - 19:00	Online FAQS Knurl-lab Forum	

The workshop offers a natural flow to learn by practice and investigation. Since the workshop time is pretty tight, we'll extend discussions and FAQs to an online platform during the workshop days. The participants are free to join collective projects or run 'solo' , keeping in mind that a solid prototype version has to be presented at the end of the workshop.

Discussion:
A round discussion with the group. The participants will be stimulated to introduce their projects and discuss those topics in their proposal:

* Representation :
Which kind of Feedback does the project offers it: visualization, typography, transducing movement
* Digital detection :
How do you want to lead the sound? In which moments do you want to control and which ones you want to release?
* Presentation:
How does the performance of this proposal look like? What is your usual set up? How many agents does the proposal involve? How much maintenance does the project require from the performer?
*Development
How many expertise and experience the performance needs should have? How open is your system to development ? Is it repairable and upgradeable? What is the macro result that you want to achieve?

Lectures:
2 short Lectures will demonstrate and offer an overview of possible approaches of reprogrammability. It will briefly contain:

* An Introduction to bela
* An Overview of hybrid body design
* An Overview of possible reprogrammable approaches.

Presentation:
The participants are very welcome to conclude their participation by giving a short explanation and demo of their proposals in a small event in the evening.