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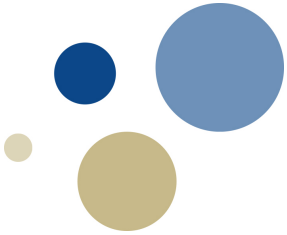

Physical Computing Workshop
2nd edition

Introduction

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Workshop Design Criteria

- Facilitate a hands-on workshop with affordable and DIY technologies (e.g. contact microphones, raw loudspeakers, Bela boards, Pd software).
- Explore individually and in group the fundamental concepts behind physical computing (e.g. tinkering, programming, making).
- Promote a sharing culture of code and discoveries (e.g. writing reflective blog posts, sharing code repositories).
- Contextualize the workshop to the broader context of interactive systems for music performance at both theoretical and practical levels (e.g. readings, practices).

What is the Workshop About?

- An intense 4-day workshop where you will explore physical computing and interactive systems.
- For the first three days, there will be a theme with paced exercises.
- At the beginning of each session there will be a warm-up activity related to the topic.
- At the end of each session there will be a network music performance to showcase the own-built prototype.
- On the last day, there will be a mini-hackathon where you will develop an interactive system for music performance mixing technologies and techniques learned throughout the workshop.
- Each team will write a blog post about the challenges and opportunities of their own-built prototype.

General Learning Outcomes

- Develop skills of computational thinking and programming.
- Explore how to create a prototype of an interactive system for music performance with low-tech technologies.
- Discover iterative design and the possibilities of network music by performing with own-built prototypes.
- Develop critical thinking skills applied to reflection on artistic practice and instrument building.

General Approach

- This workshop should be seen as a starting point to get interest with physical computing applied to interactive music systems.
- It has been designed to be low tech, that is, using open source or consumer affordable gadgets.
- It has been designed to be participatory and playful.

What it is not

— An in-depth tutorial of a particular technology.
— A technical course: just enough to build things!
— A course about soldering.

However... related resources will be provided.

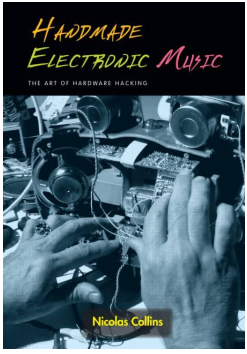
Grading

— The Physical Computing workshop is evaluated with a Pass/Fail grade.
— Attendance is required to pass because the workshop consist of practical group work, collective participation and discussion. Active engagement in the tasks at hand is also required to pass.
— You will be expected to participate in the daily performance.
— You will be expected to contribute to the two blogposts of the workshops.

Previous Knowledge / Preparation

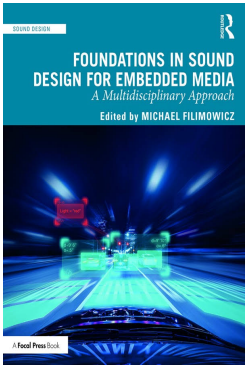
- No previous knowledge is required. This workshop is designed to be a standalone workshop. The preparation material is described in the description of each session on Canvas.
- Every day you should check if there is a list of items that need to be brought to class.
- Every day you should check whether there are suggested readings that might be discussed at the beginning of the class.

Recommended General Readings



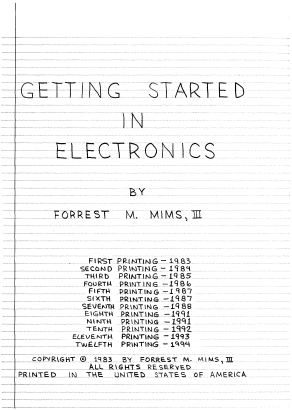
— The book *Handmade Electronic Music* by Nicolas Collins [1].
— ... and in general all the videos related to Collins' book:
`https://www.nicolascollins.com/video/`

Recommended General Readings



— The book *Foundations in Sound Design for Embedded Media: A Multidisciplinary Approach* by Michael Filimowicz (ed) [2].

Recommended General Readings



GETTING STARTED
IN
ELECTRONICS

BY

FORREST M. MIMS, III

FIRST PRINTING – 1983
SECOND PRINTING – 1984
THIRD PRINTING – 1985
FOURTH PRINTING – 1986
FIFTH PRINTING – 1987
SIXTH PRINTING – 1987
SEVENTH PRINTING – 1988
EIGHTH PRINTING – 1991
NINTH PRINTING – 1991
TENTH PRINTING – 1992
ELEVENTH PRINTING – 1993
TWELFTH PRINTING – 1994

— The book *Getting Started in Electronics* by Forrest Mims [3].

Tips

— Divide and conquer (Dijkstra).
— It can take up to 10 years to become an expert programmer. Focus on learning programming strategies instead of knowledge [4].
— Enjoy the beauty of the ephemeral.

References

[1] Nicolas Collins. *Handmade Electronic Music: The Art of Hardware Hacking*. New York: Routledge, 2004.

[2] Michael Filimowicz, ed. *Foundations in Sound Design for Embedded Media: A Multidisciplinary Approach*. New York: Routledge, 2004.

[3] Forrest M Mims. *Getting Started in Electronics*. Master Publishing, Incorporated, 1983.

[4] Anthony Robins, Janet Rountree, and Nathan Rountree. "Learning and Teaching Programming: A Review and Discussion". In: *Computer Science Education* 13.2 (2003), pp. 137–172.