SNAPtoTRACE

LIZA STARK

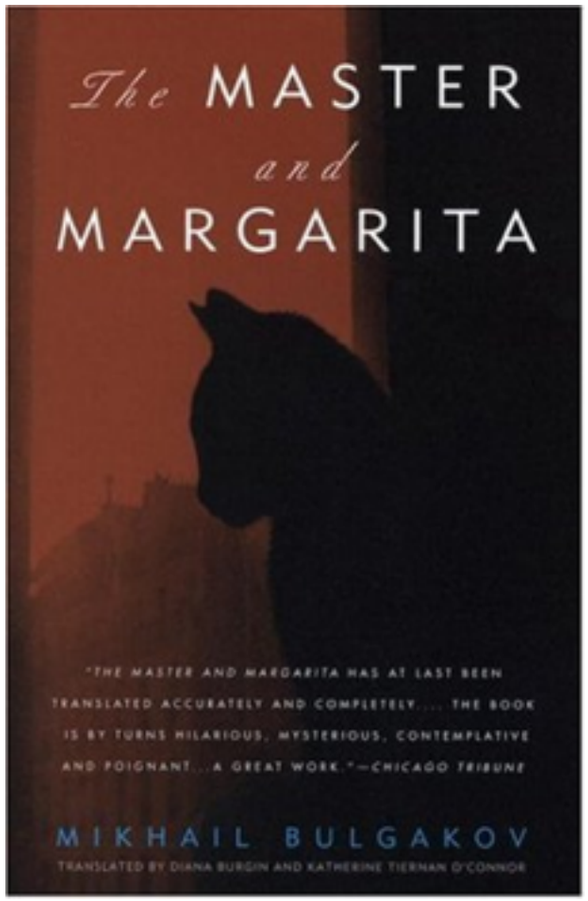
February 19, 2012

Graduate Student Consortium
TEI 2012

MFA Design + Technology Candidate
PARSONS THE NEW SCHOOL FOR DESIGN

me

SOME BACKGROUND



me

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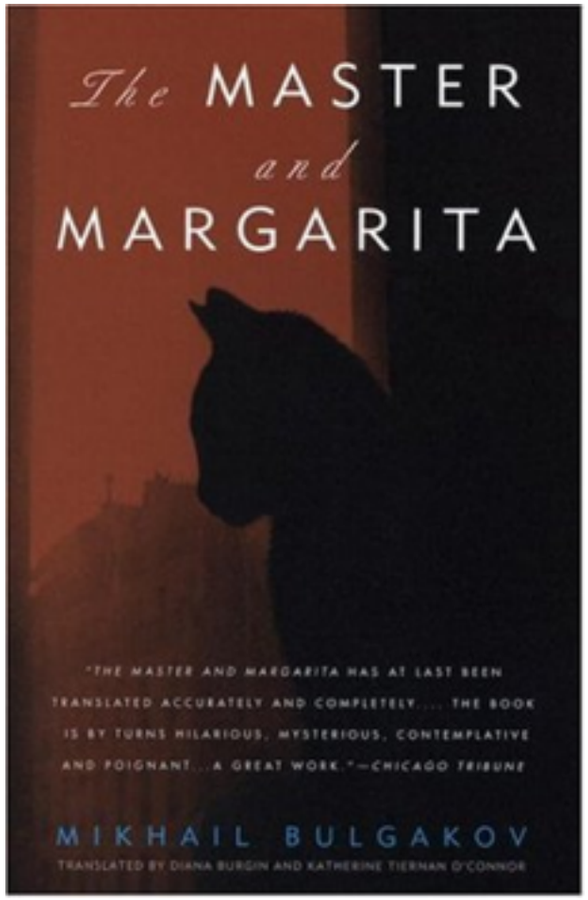

me

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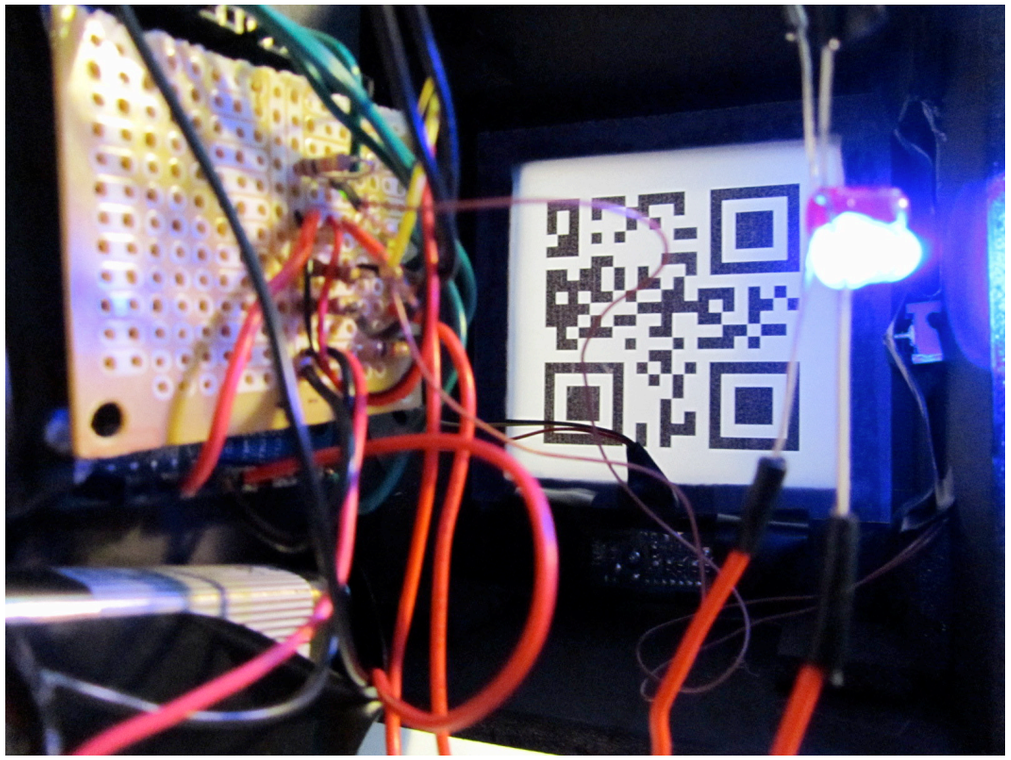

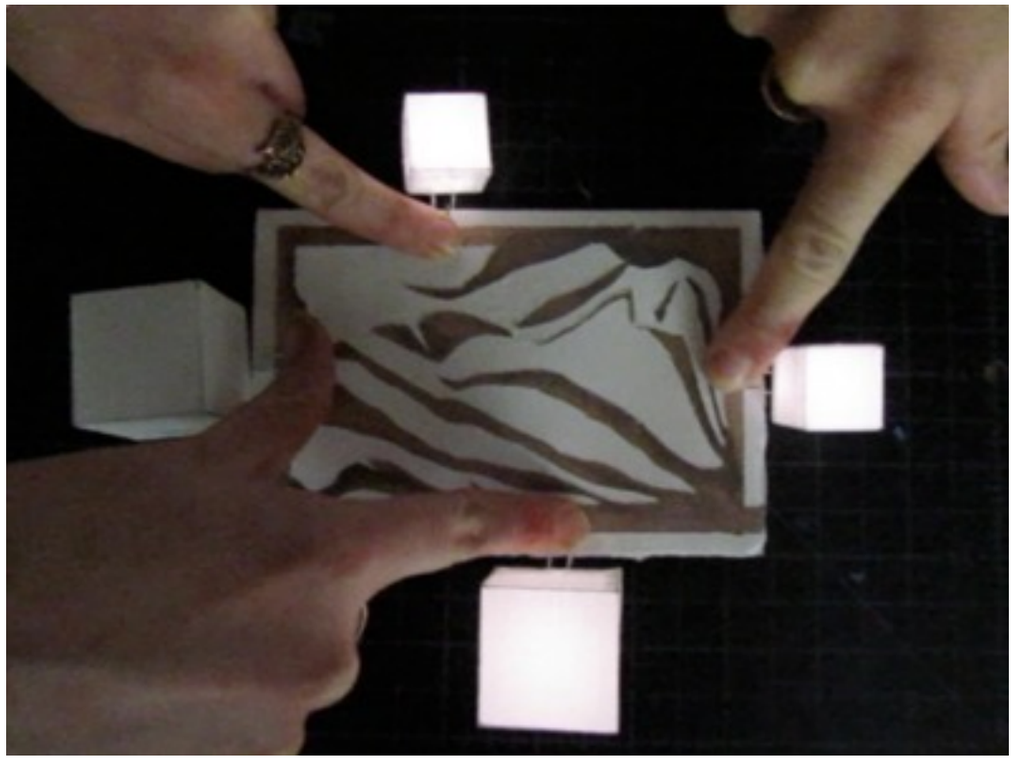

questions

What different strategies, methodologies, and approaches exist to engage broader audiences with computational thinking and electrical concepts ?

How can a refocus on **materials** create new, dynamic points of entry into computational thinking for less engaged populations?

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Specific objectives include:

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goals

(1) Creative self-expression

(2) Design/systems thinking

(3) Avenue to other interests

(4) Confidence in experimentation

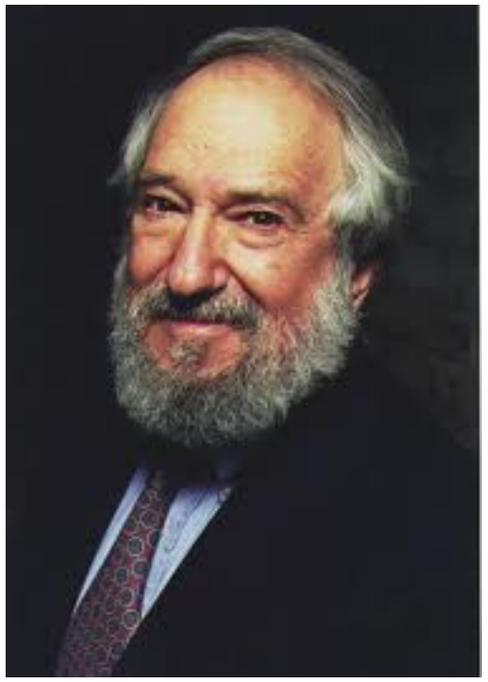
learning theory

COGNITION AND TANGIBILITY

FROEBEL

PIAGET

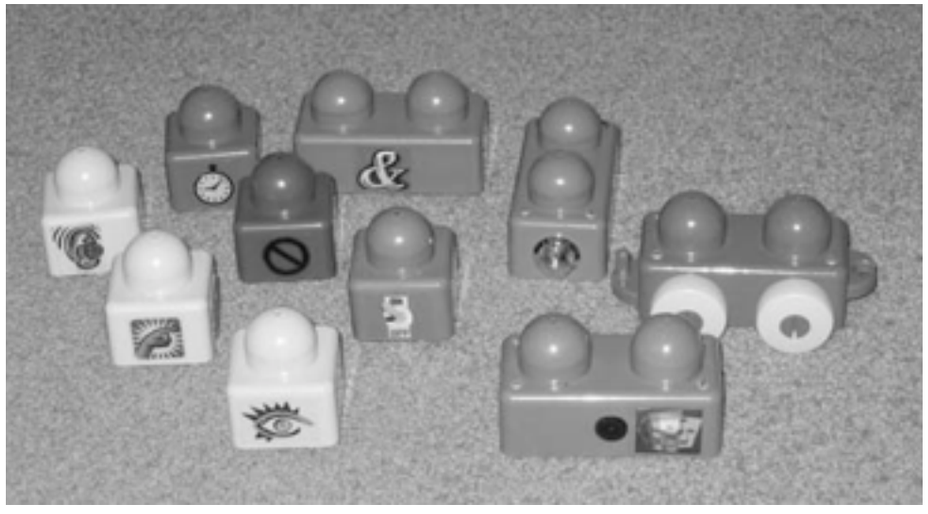
VYGOTSKY

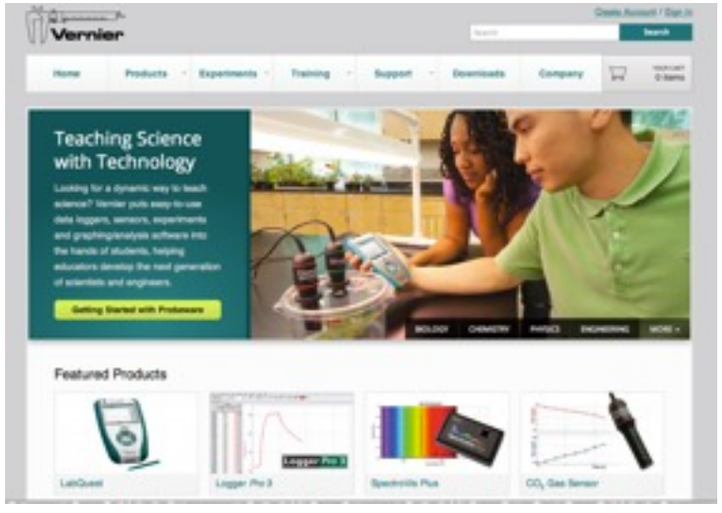


PAPERT

related work

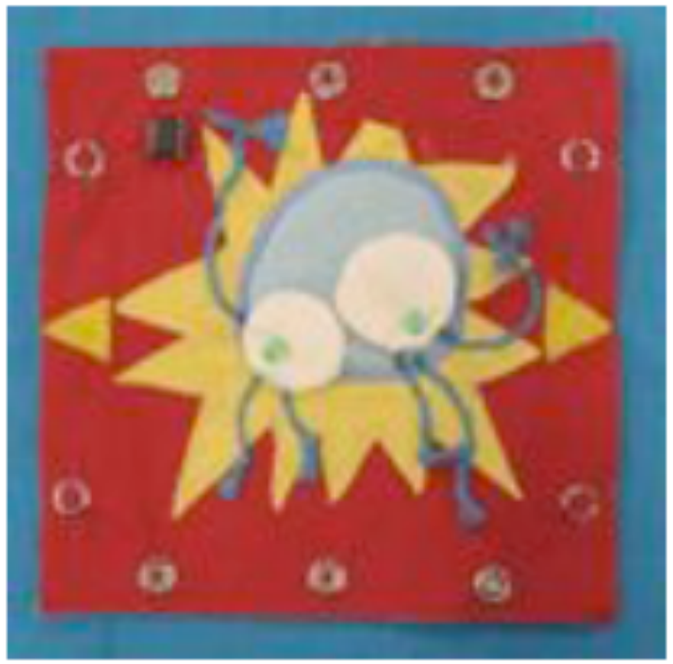
COMPUTER SCIENCE, PHYSICAL COMPUTING, AND ROBOTICS





related work

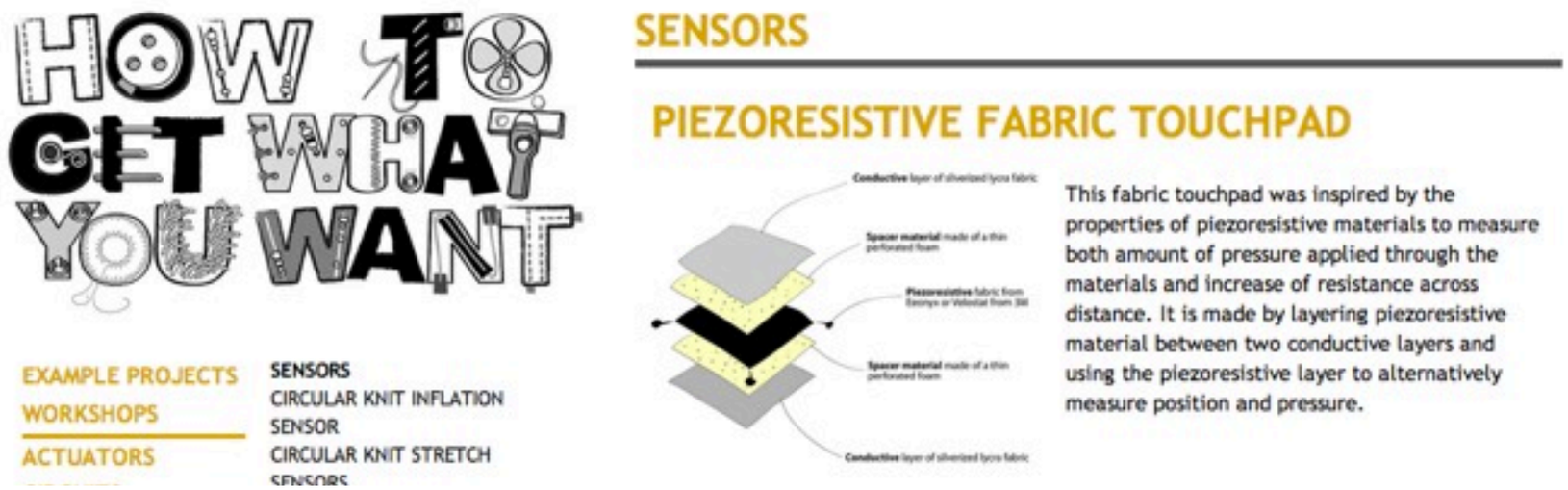
CRAFT TECHNOLOGY GROUP @ UC BOULDER

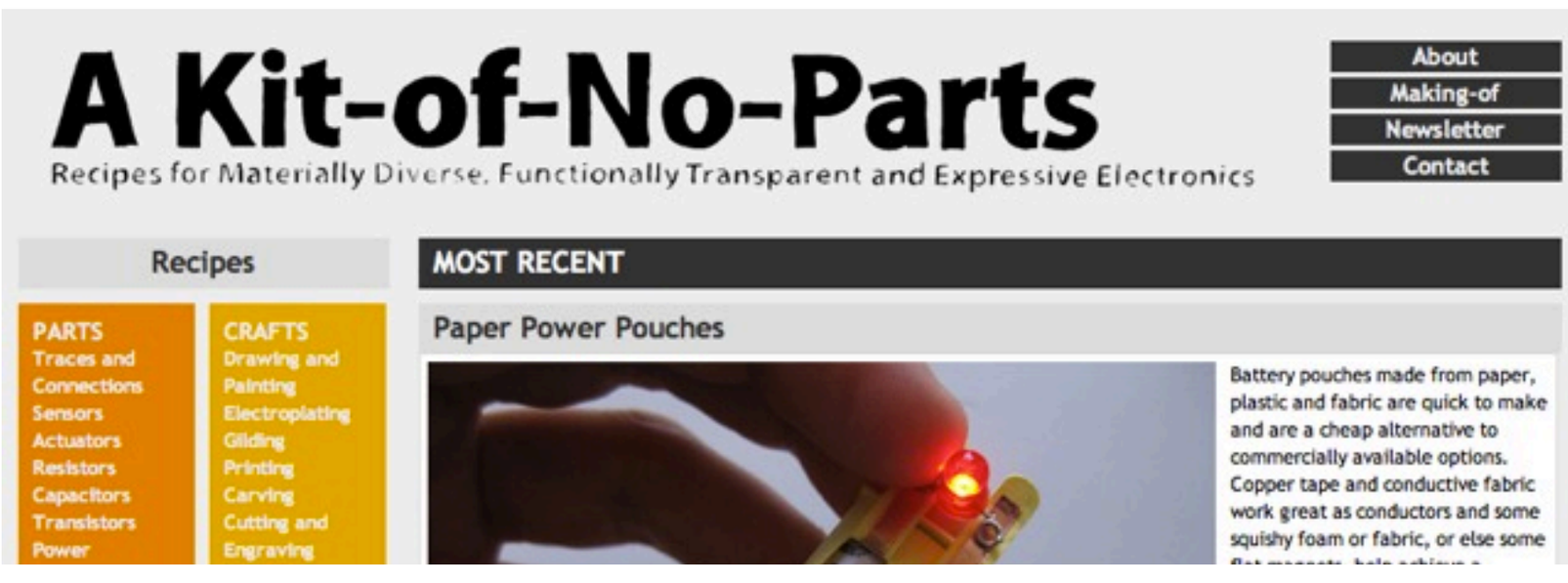


Leah Buechley, Nwanua Elumeze, and Michael Eisenberg, "Electronic/Computational Textiles and Children's Crafts," in Proceedings of IDC '06 (presented at the IDC, Tampere, Finland: ACM, 2006), 49.

related work

HIGH LOW TECH @ MIT





Kit of No Parts: http://web.media.mit.edu/~plusea/
How to Get What You Want: http://www.kobakant.at/DIY/?cat=26

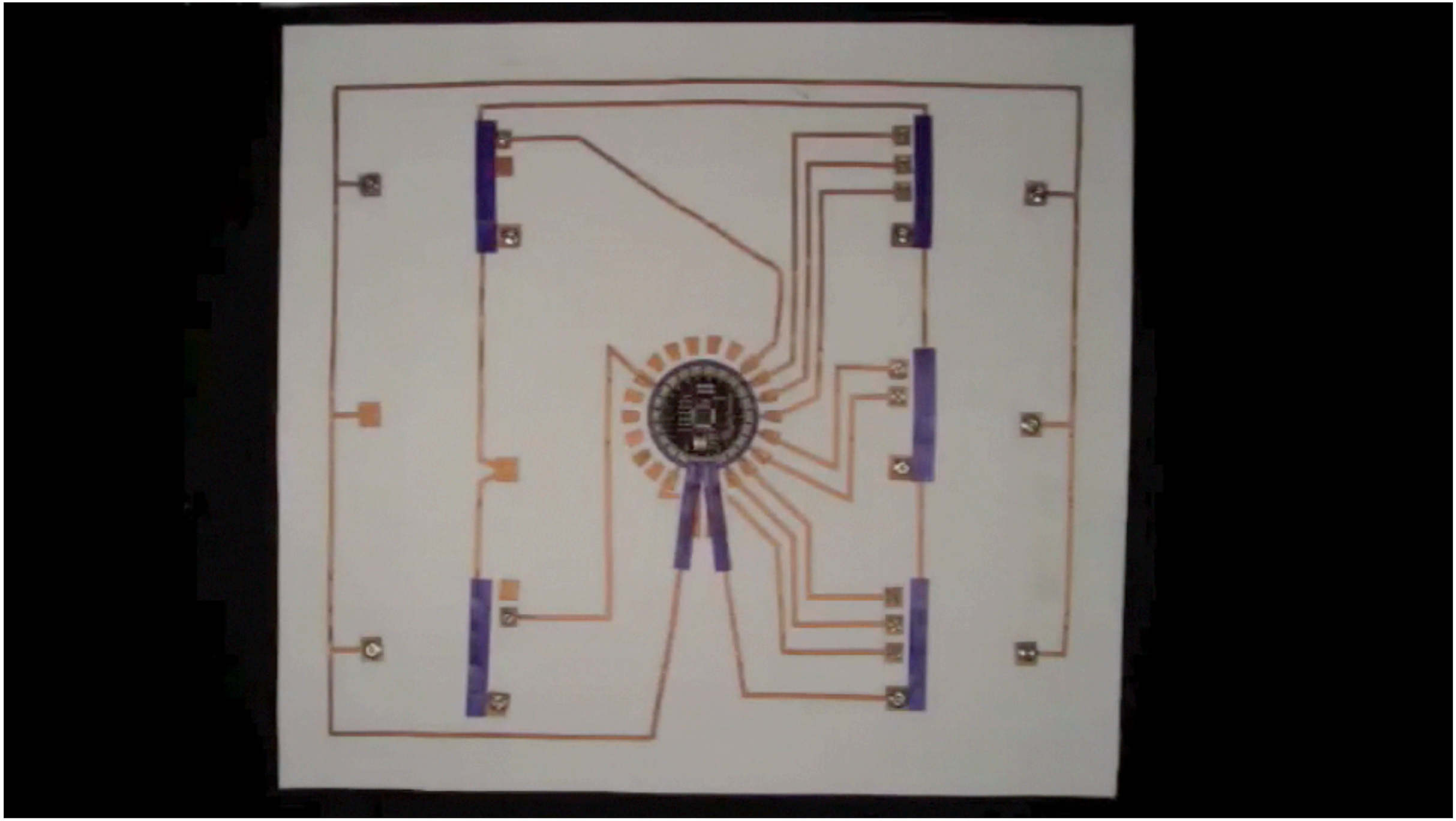
related work

CARNEGIE MELLON UNIVERSITY

Stacey Kuznetsov et al., "Breaking Boundaries: Strategies for Mentoring through Textile Computing Workshops," in Proceedings of the Annual Conference on Human Factors in Computing Systems (presented at the CHI, ACM Press, 2011), 2957, http://dl.acm.org/citation.cfm?id=1978942.1979380&coll=DL&dl=GUIDE&CFID=53576576&CFTOKEN=40973643.

interface

INPUT_CONTROL_OUTPUT



interface

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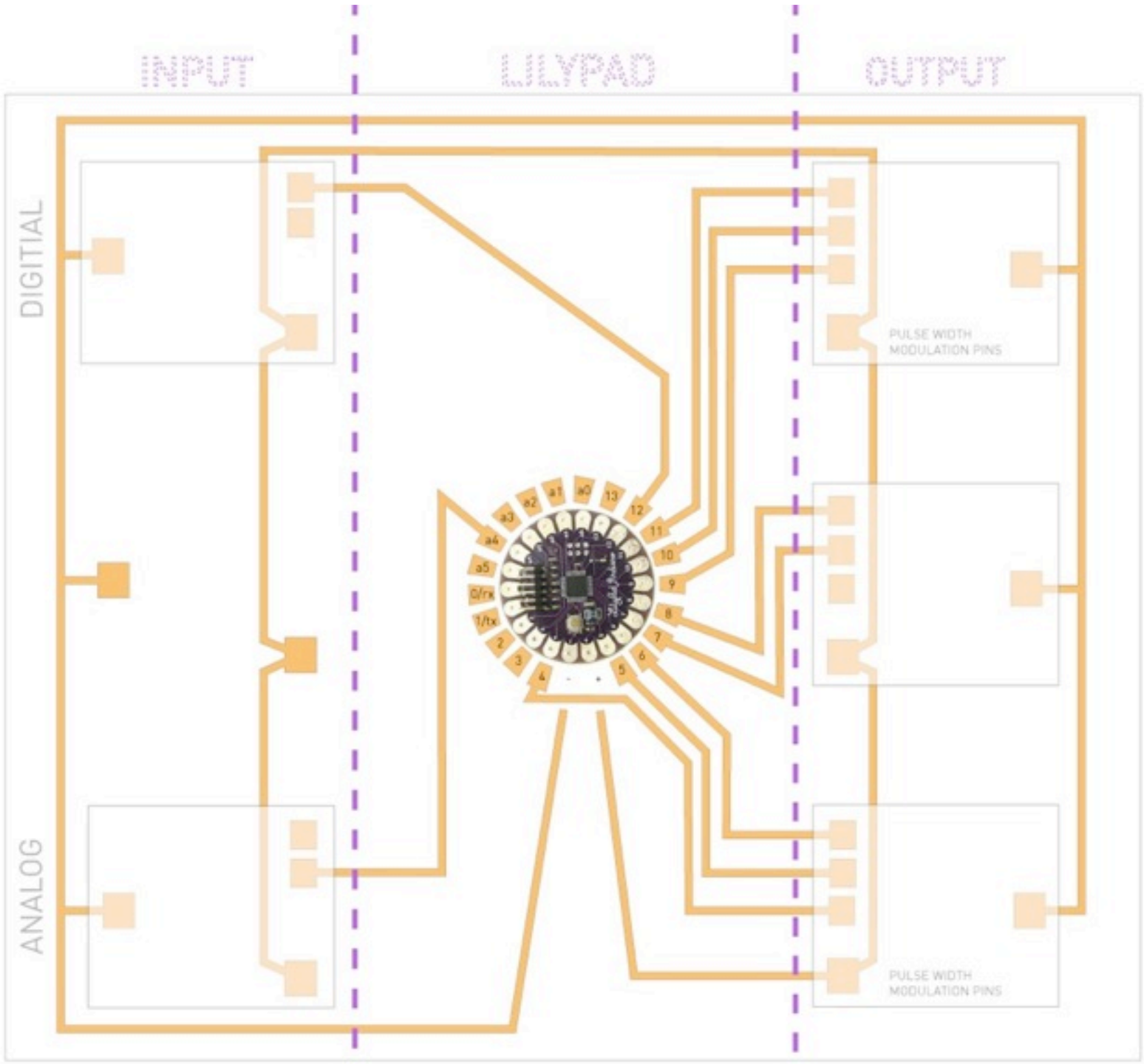


interface

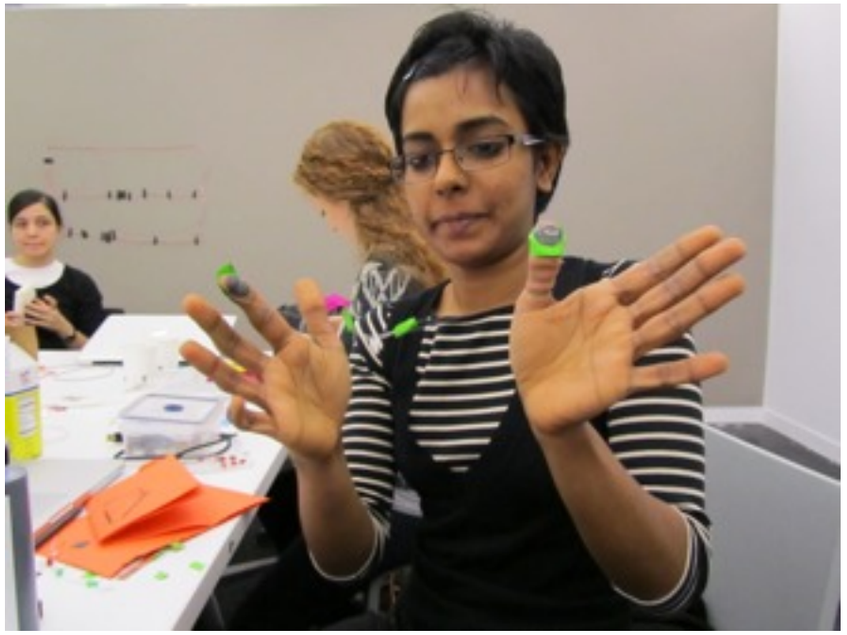
MATERIALS_BUILDING

user testing

AUDIENCE+METHODOLOGY

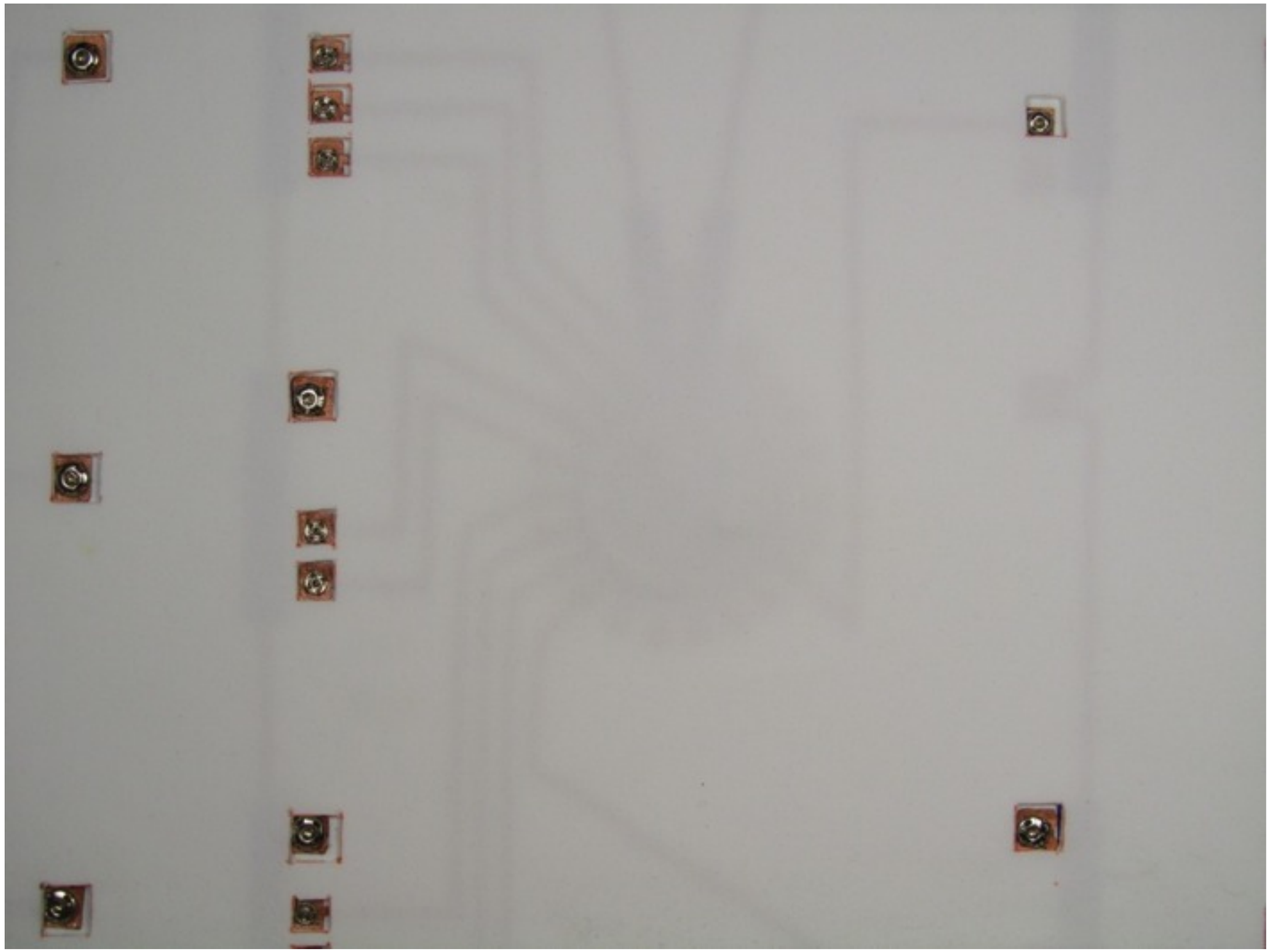
user testing

AUDIENCE+METHODOLOGY



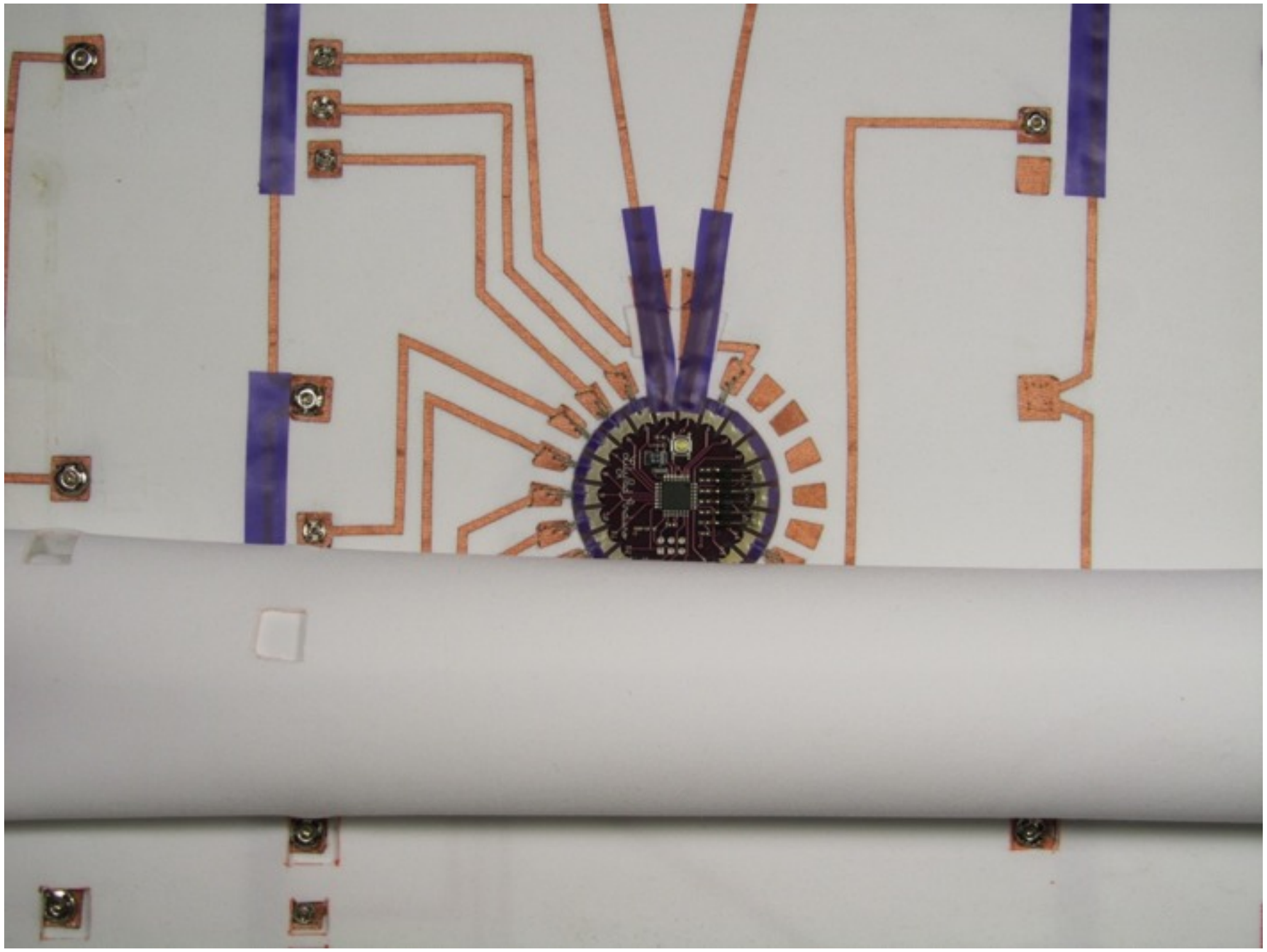
user testing

NOVICES



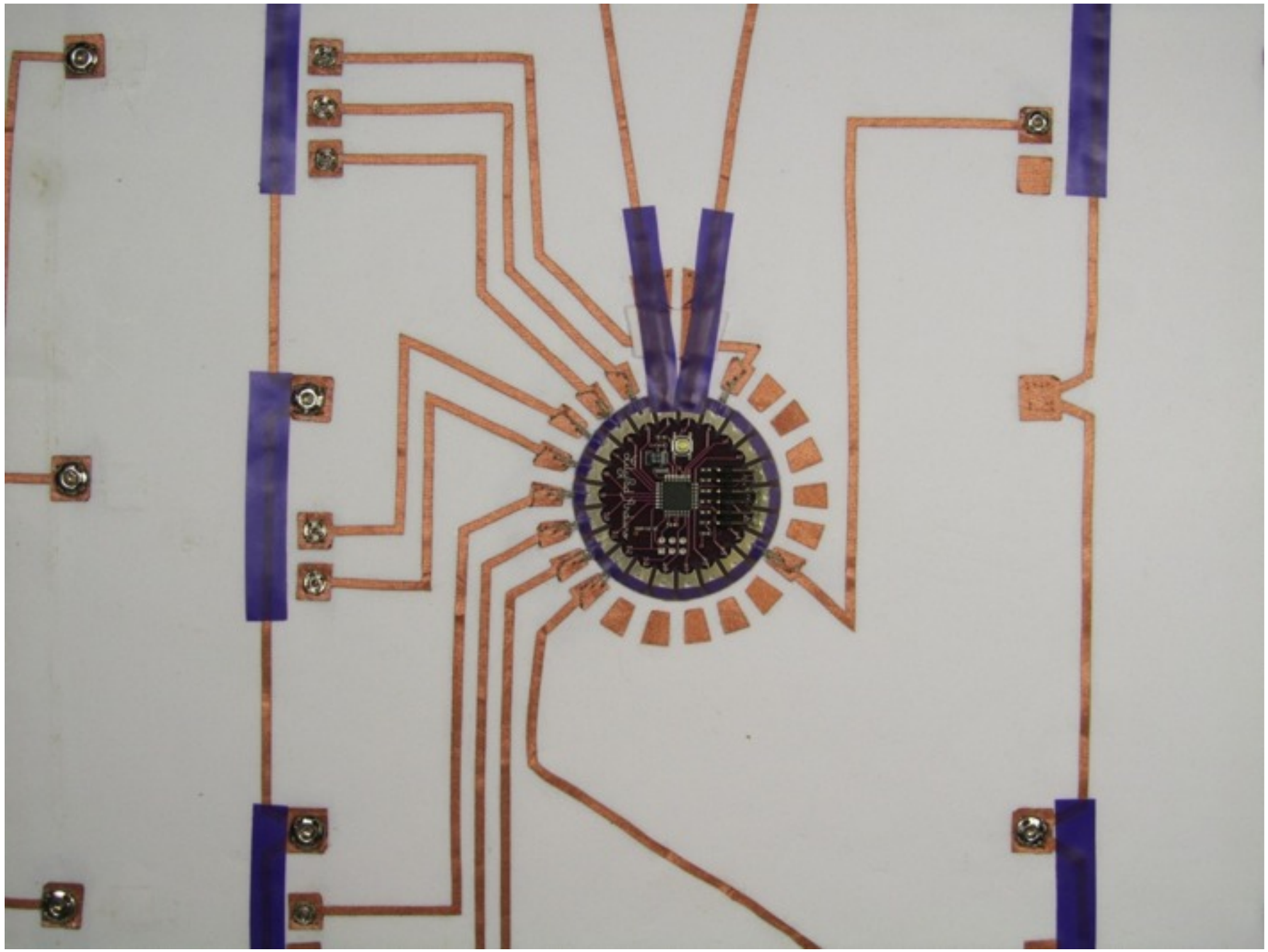
user testing

SOFT CIRCUITEERS



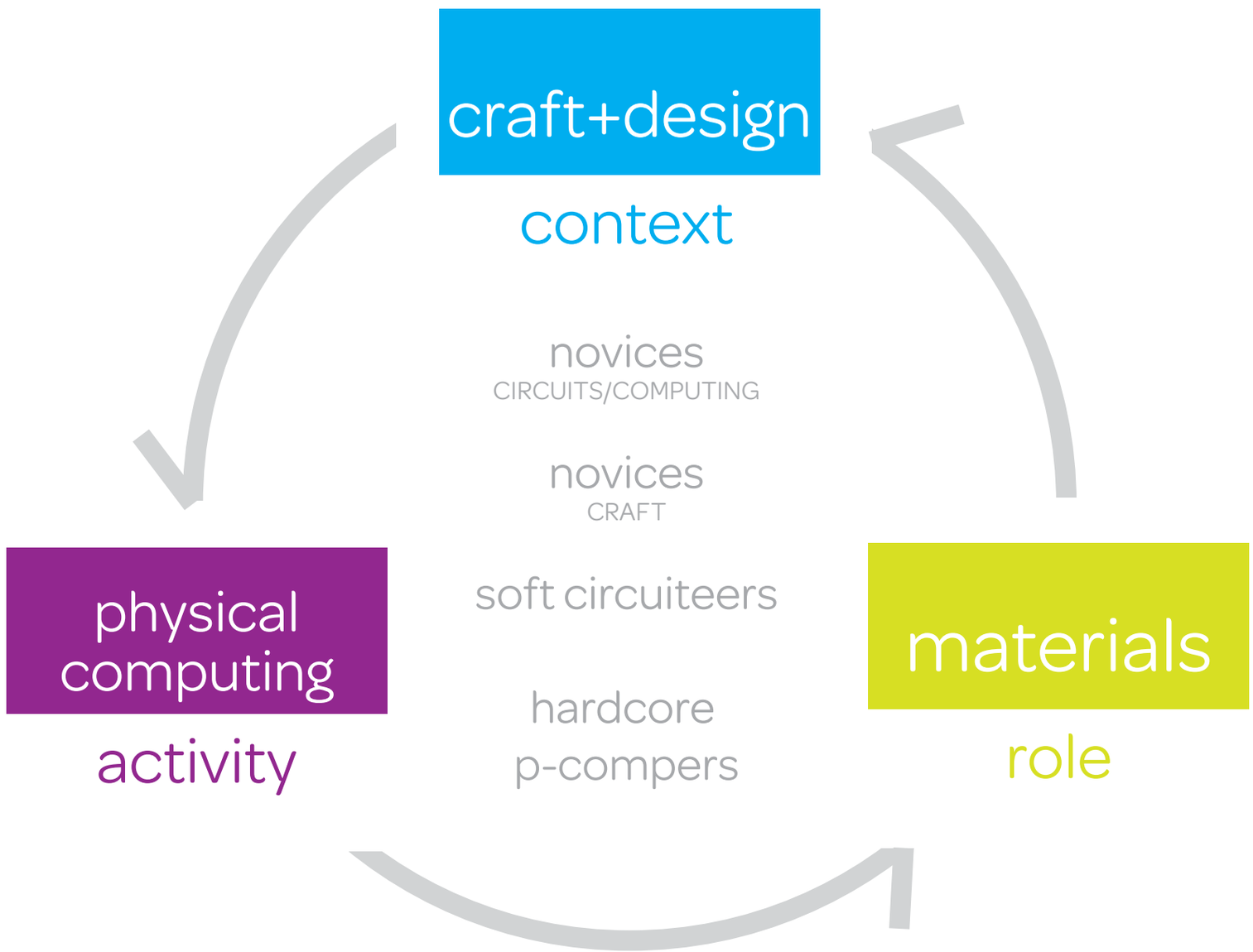
user testing

HARD CORE P COMPERS/ENGINEERS



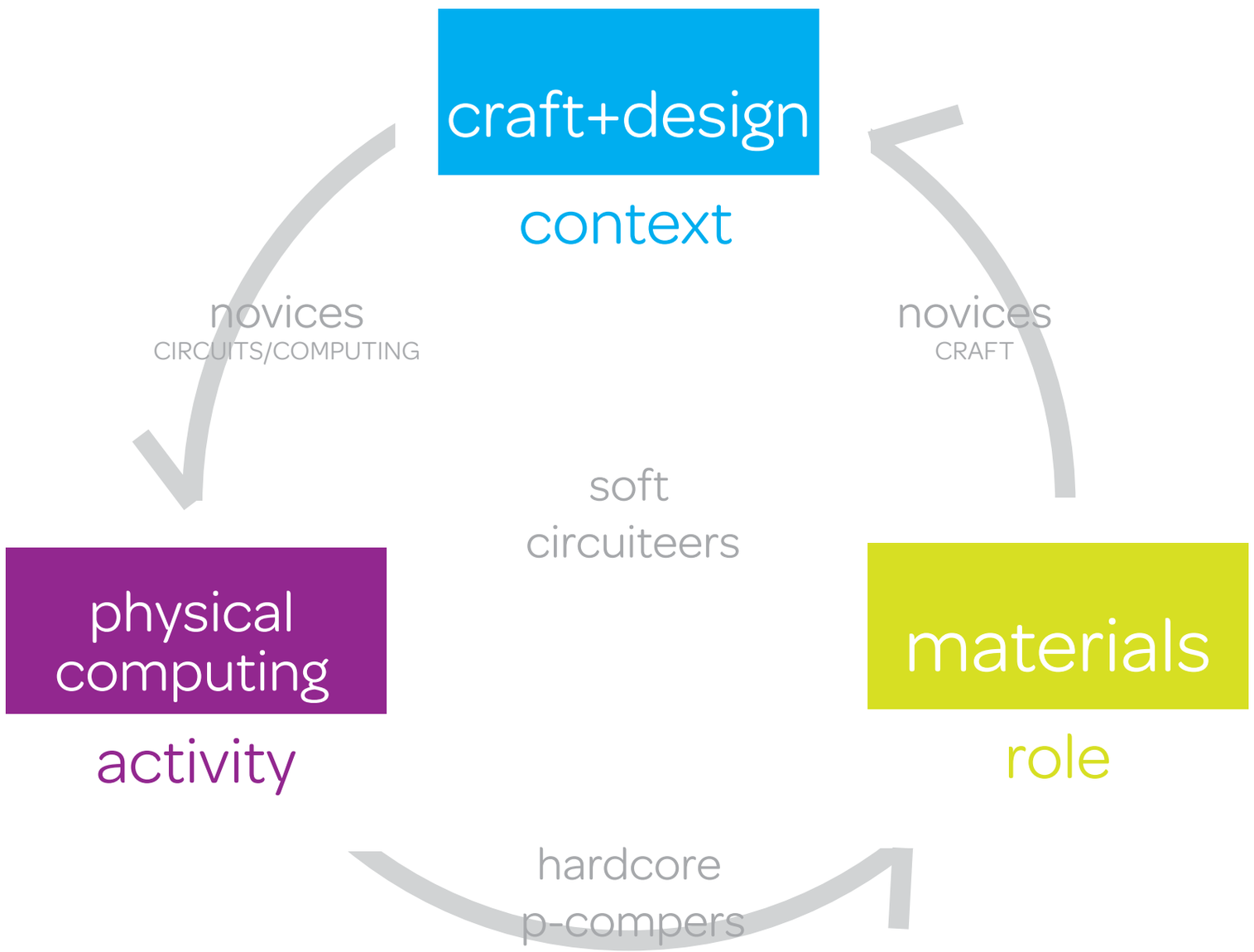
user testing

AUDIENCE+METHODOLOGY



user testing

FEEDBACK



domains

RESEARCH CONTEXT

framework	engagement	learning
pedagogical approach	diverse entry points	assessment methodologies

Scalability + scaffolding

Exploration followed by application

* *The "output rule"*

Design, debugging, and systems thinking

* *Salutary failure*
* *Self-regulating/self-guiding*
* *Studio-based pedagogy*

domains

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Materials

Circuitry + computing as *creative* acts

=

domains

RESEARCH CONTEXT

framework	engagement	learning
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STE[A]M + Informal science learning strands:

(1) Experience excitement, interest, and motivation to learn about phenomena in the natural and physical world.

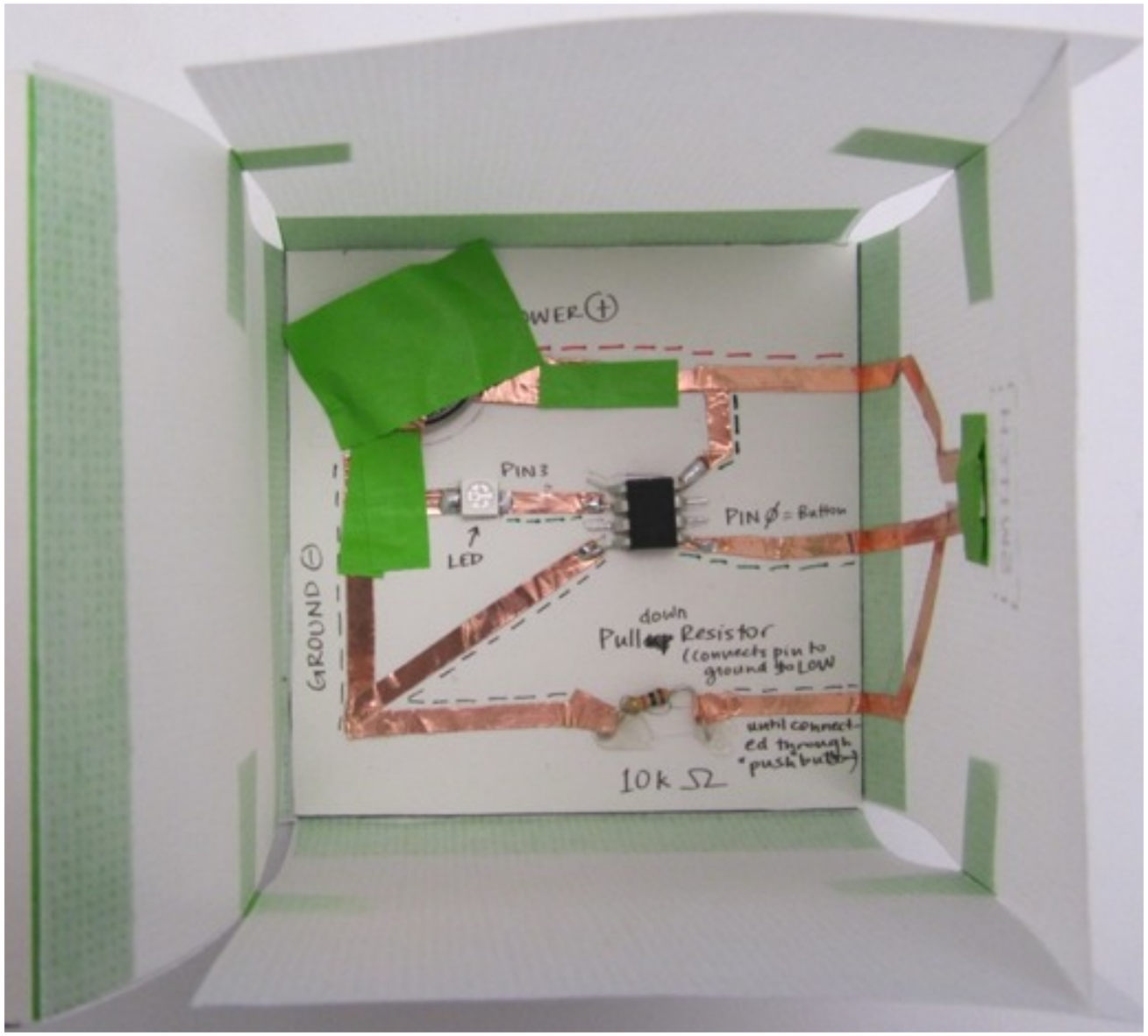
(3) Manipulate, test, explore, predict, question, observe, and make sense of the natural and physical world.

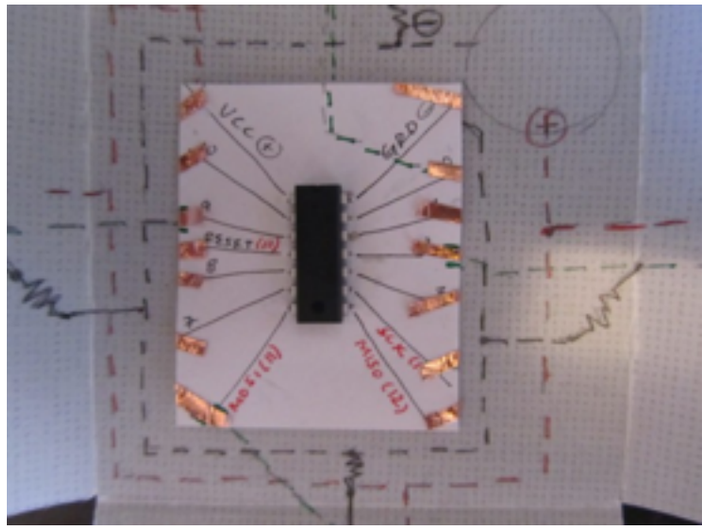
(6) Think about themselves as science learners and develop an identity as someone who knows about, uses, and sometimes contributes to science.

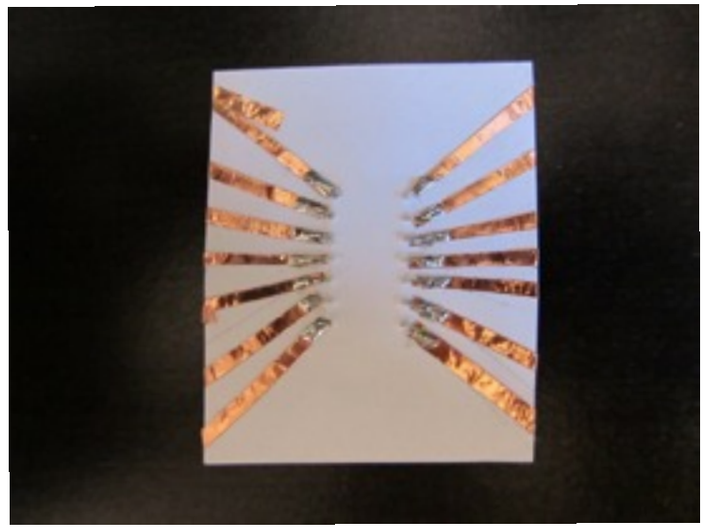
"Learning Science in Informal Environments: People, Places, and Pursuits", n.d., http://books.nap.edu/openbook.php?record_id=12190.

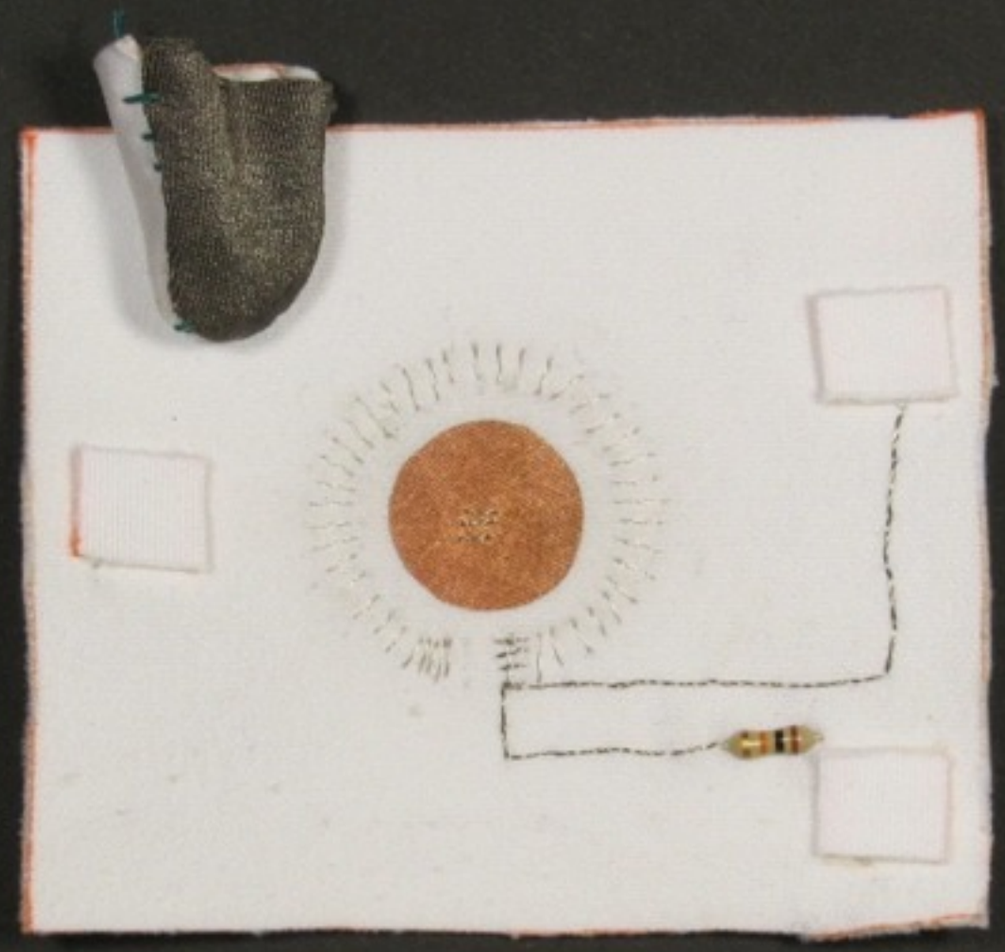
new iterations

THE PAPER GENERATION









thank you!

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