



# Post-Desktop User Interfaces

Seminar at the Media Computing Group  
WS 2019/20



**RWTH**AACHEN  
UNIVERSITY

# The Media Computing Group



# Seminar Advisors



Marcel Lahaye  
[lahaye@cs.rwth-aachen.de](mailto:lahaye@cs.rwth-aachen.de)



Adrian Wagner  
[wagner@cs.rwth-aachen.de](mailto:wagner@cs.rwth-aachen.de)



Sebastian Hueber  
[hueber@cs.rwth-aachen.de](mailto:hueber@cs.rwth-aachen.de)



Philipp Wacker  
[wacker@cs.rwth-aachen.de](mailto:wacker@cs.rwth-aachen.de)



Christian Cherek  
[cherek@cs.rwth-aachen.de](mailto:cherek@cs.rwth-aachen.de)



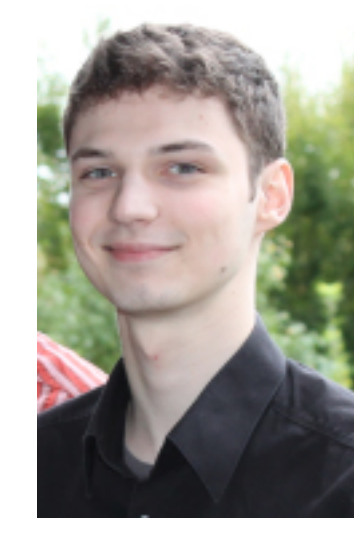
Simon Völker  
[voelker@cs.rwth-aachen.de](mailto:voelker@cs.rwth-aachen.de)



Anke Brocker  
[brocker@cs.rwth-aachen.de](mailto:brocker@cs.rwth-aachen.de)

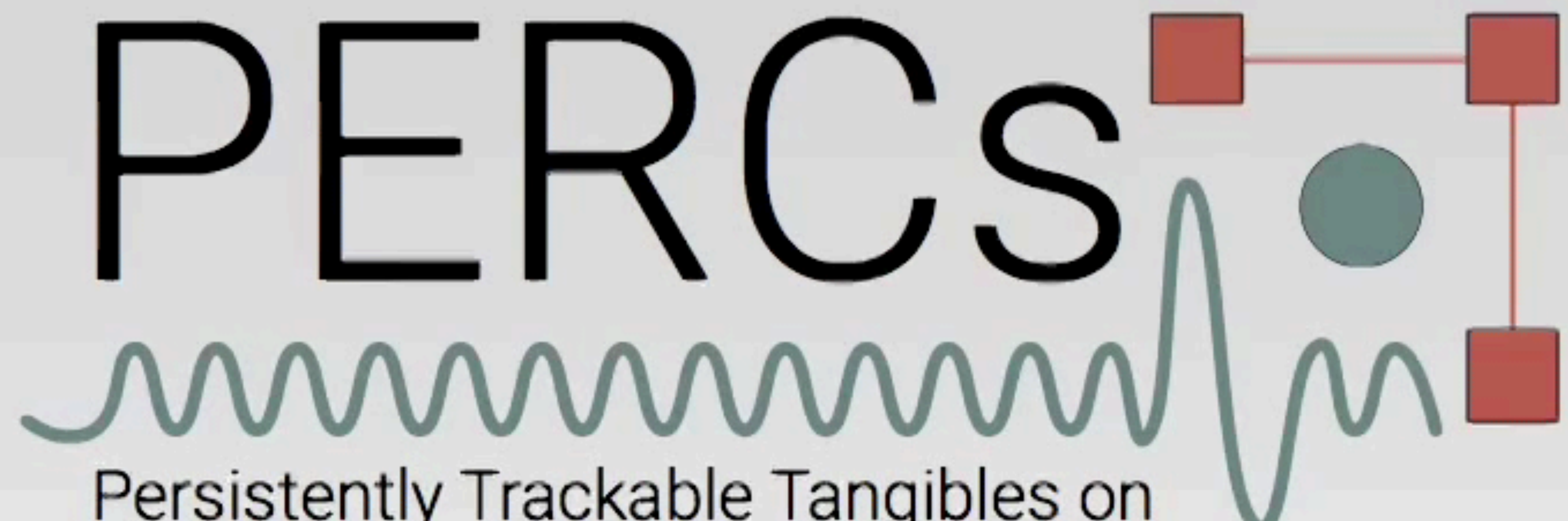


Krishna Subramanian  
[krishna@cs.rwth-aachen.de](mailto:krishna@cs.rwth-aachen.de)



Oliver Nowak  
[nowak@cs.rwth-aachen.de](mailto:nowak@cs.rwth-aachen.de)

# PERCS

The logo for PERCS features a teal wavy line that starts with a regular, low-amplitude oscillation and then transitions into a single, larger-amplitude wave. To the right of the wavy line are three red squares: one at the top left, one at the top right, and one at the bottom right. A horizontal line connects the two top squares, and a vertical line connects the top right square to the bottom right square. A teal circle is positioned between the top right square and the wavy line.

Persistently Trackable Tangibles on  
Capacitive Multi-Touch Displays

Simon Voelker, Christian Cherek, Jan Thar, Thorsten Karrer, Christian Thoresen,  
Kjell Ivar Øvergård, Jan Borchers

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# Sketch&Stitch: Interactive Embroidery for E-textiles

Nur Al-huda Hamdan – Simon Voelker – Jan Borchers



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[hci.rwth-aachen.de/Sketch&Stitch](http://hci.rwth-aachen.de/Sketch&Stitch)

ACM CHI 2018

# VibroVision

An On-Body Tactile Guide for the Blind

Philipp Wacker  
RWTH Aachen University

Chat Wacharamanotham  
University of Zurich

Daniel Spelmezan  
University of Sussex

Jan Thar  
RWTH Aachen University

David A. Sánchez  
RWTH Aachen University

René Bohne  
RWTH Aachen University

Jan Borchers  
RWTH Aachen University

# BackXPress: Using Back-of-Device Finger Pressure to Augment Touchscreen Input on Smartphones

Christian Corsten – Bjoern Daehlmann – Simon Voelker – Jan Borchers



Media  
Computing  
Group

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[hci.rwth-aachen.de/BackXPress](http://hci.rwth-aachen.de/BackXPress)

# Physical Guides

An Analysis of 3D Sketching Performance on Physical Objects in Augmented Reality

Philipp Wacker

Adrian Wagner

Simon Völker

Jan Borchers

(<https://hci.rwth-aachen.de>)



Chair for Computer  
Science 10 (Media  
Computing and Human-  
Computer Interaction)

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# Seminar Logistics

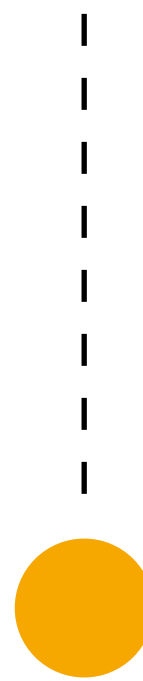


# Format

- Language: English
- Groups of 2, no separation of responsibility
- Each person should know the content and be able to present/answer questions
- Questions may be directed at a particular person during Q&A session
- Attending all talks is mandatory, only exception: medical certificate
- Talk and written report are graded separately

# Schedule

04.10. – 14.11.  
LITERATURE REVIEW



FIRST REPORT

CAMERA-READY  
SLIDES

FINAL REPORT

REPORT OUTLINE

SLIDES

PRESENTATION  
21.11. – 16.01.



# E-Mail Submission

## All submissions

- To your supervisor – [your supervisor]@cs.rwth-aachen.de
- Subject starts with [PDUI Submission]  
Example: “[PDUI Submission] Final Report”
- Deadline – Given date at 23:59 CEST  
Example Group 1, Final Report – 05.12.2018, 23:59

## Everything else

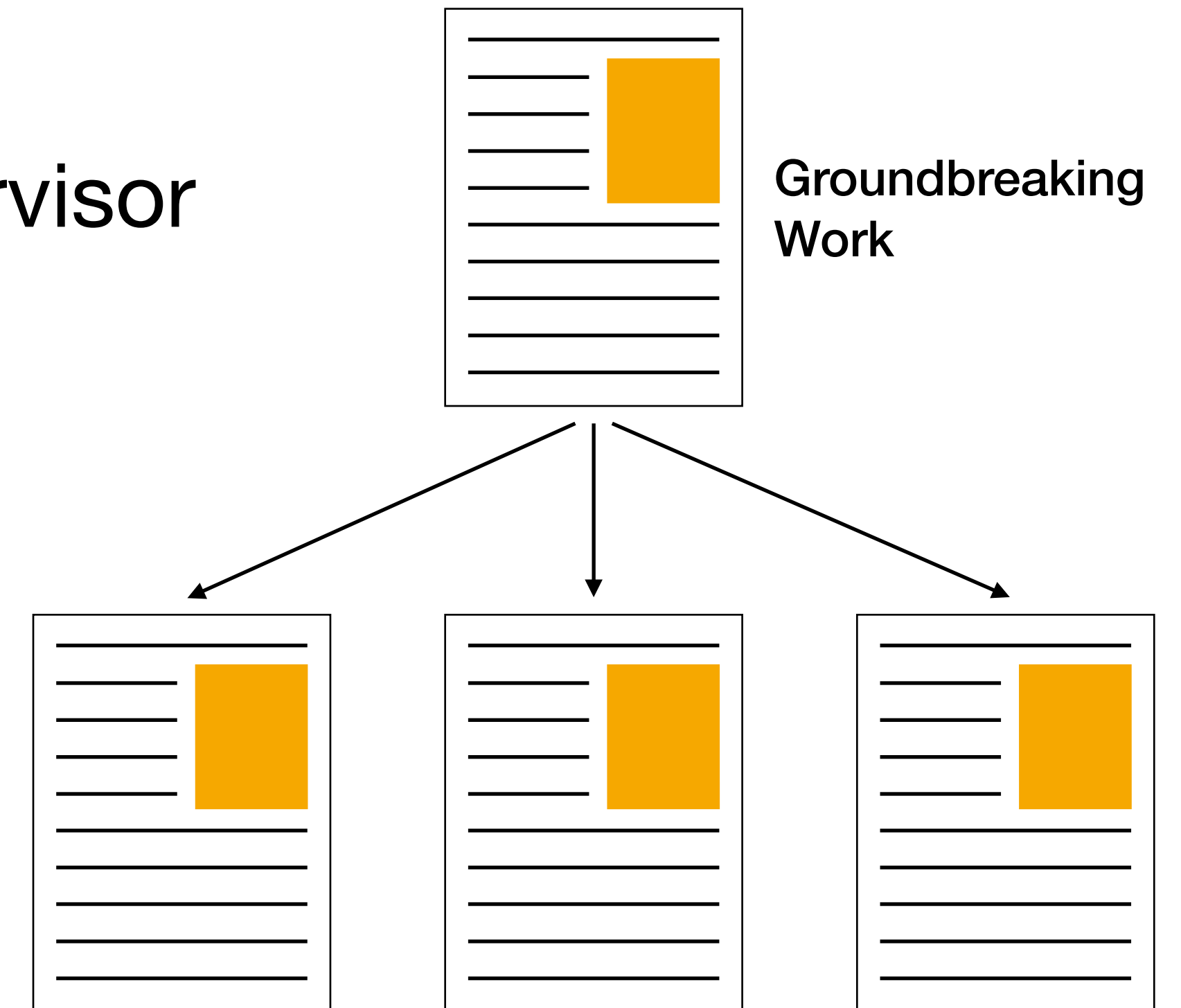
- Subject starts with [PDUI]  
Example: “[PDUI] Is red really the best colour?”
- General Questions to Marcel – [lahaye@cs.rwth-aachen.de](mailto:lahaye@cs.rwth-aachen.de)
- Specific Questions to your supervisor – [your supervisor]@cs.rwth-aachen.de

# Milestone 1: Literature Review

- **When:** 9 weeks before final report
- **How:** **E-Mail submission** and **meeting** with supervisor
- Deliverable:
  - List of at least 7 relevant related papers
  - For each paper: 30 word statement of benefits and contribution
  - visit [https://hci.rwth-aachen.de/tiki-download\\_wiki\\_attachment.php?attId=2311](https://hci.rwth-aachen.de/tiki-download_wiki_attachment.php?attId=2311)

# Milestone 2: Outline of Report

- **When:** 8 weeks before final report
- **How:** **E-Mail submission** and **meeting** with supervisor
- Deliverable:
  - Clear structure of final paper submission
  - Start thinking about a storyline

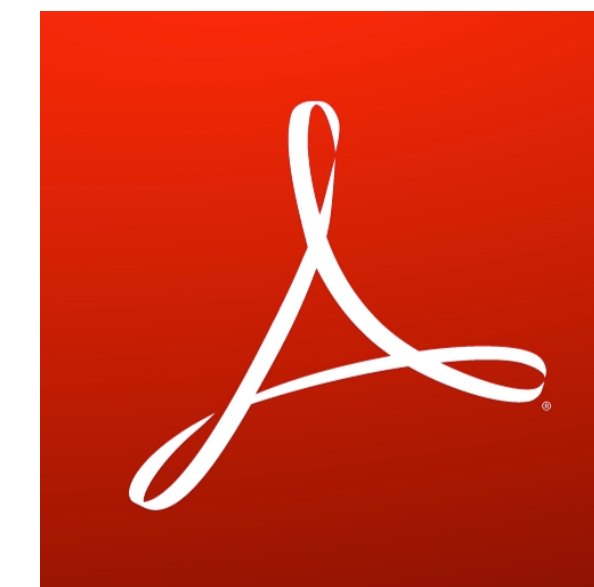


# Milestone 3: First Submission of Report

- **When:** 6 weeks before final report
- **How: E-mail submission.** After correction: supervisor feedback (by appointment)
- Deliverable:
  - First **complete** version of paper (10 Pages ACM Journal Template)
    - Template on Seminar Website
    - Proof-read, no typos, no layout issues

# Milestone 4 & 5: Camera-Ready Presentation Slides

- **When:** 4 & 3 week before final report
- **How:** **E-mail submission** and **meeting** with supervisor
- Deliverable:
  - Complete, polished version of presentation slides
  - Format: Keynote, PowerPoint, Prezi, or PDF





# Milestone 6: Presentation

- **When:** Thursdays, 02:30pm – 04:00pm  
**Where:** seminar room at i10 (2222)
- Presentation can be video-captured
- 50% of final grade
- Format:
  - 20 minutes of presenting
  - Questions and answers
  - Review of presentation style
  - Feedback by the audience



# Presentation Dates

Thursdays, 02:30 – 04.00pm, Room 2222

Nov.	Dec.	Jan.
21.11.	05.12.	09.01.
28.11	12.12.	16.01.
	19.12.	

# Milestone 7: Final Report Submission

- **How:** E-mail submission
- Deliverable:
  - Final version of your paper (10 Content Pages)
- 50% of final grade

# Topics

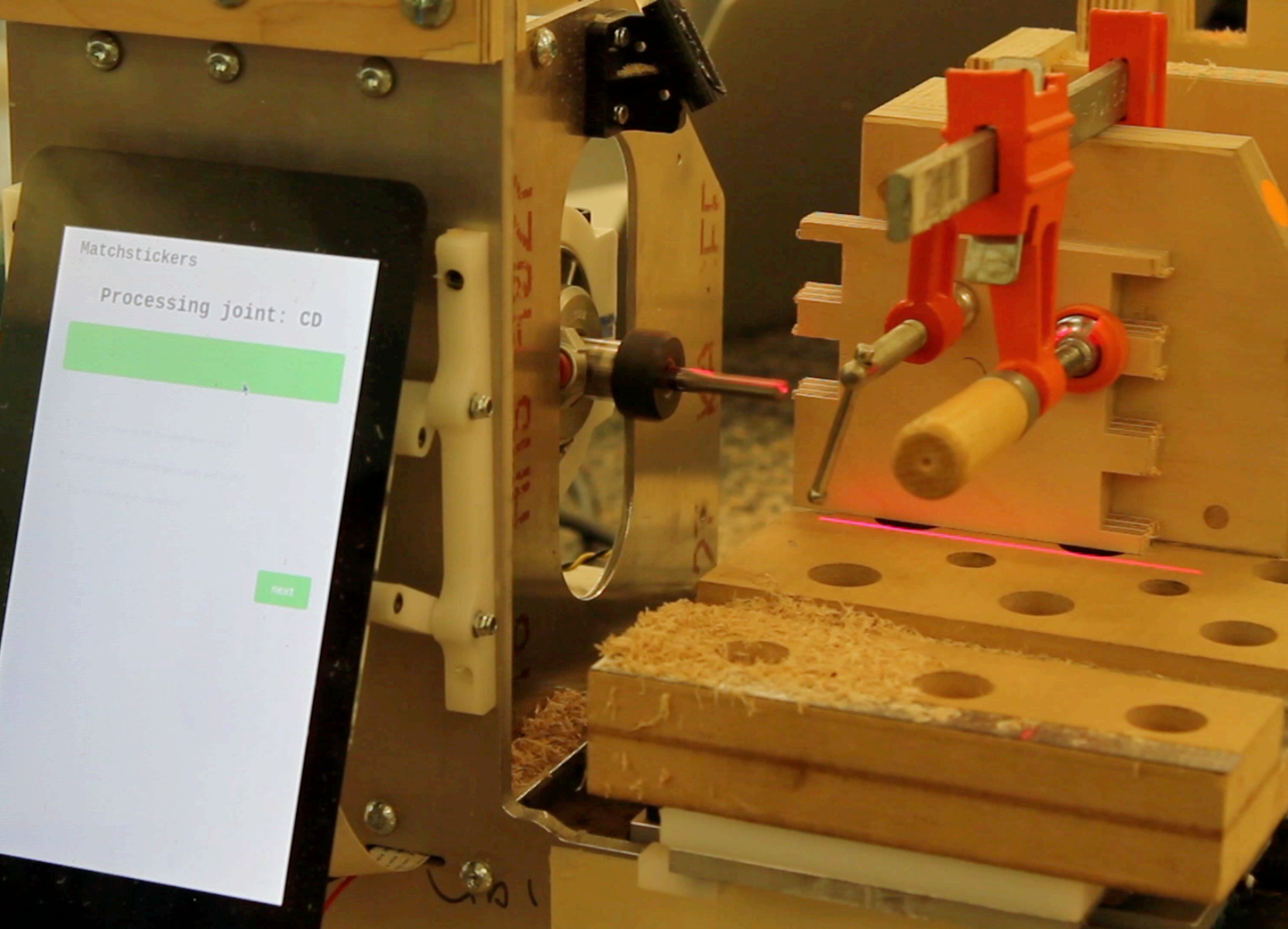
- Topics were chosen by us because we want to learn more about them
- You are responsible for informing us
- Need more than just a summary
- Demonstrate higher level of understanding

# Tangible User Interfaces in Personal Fabrication

Marcel Lahaye

Weichel et al.,  
ReForm: Integrating  
Physical and Digital  
Design through  
Bidirectional  
Fabrication, UIST'15

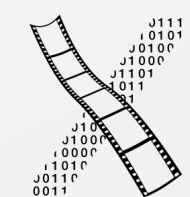


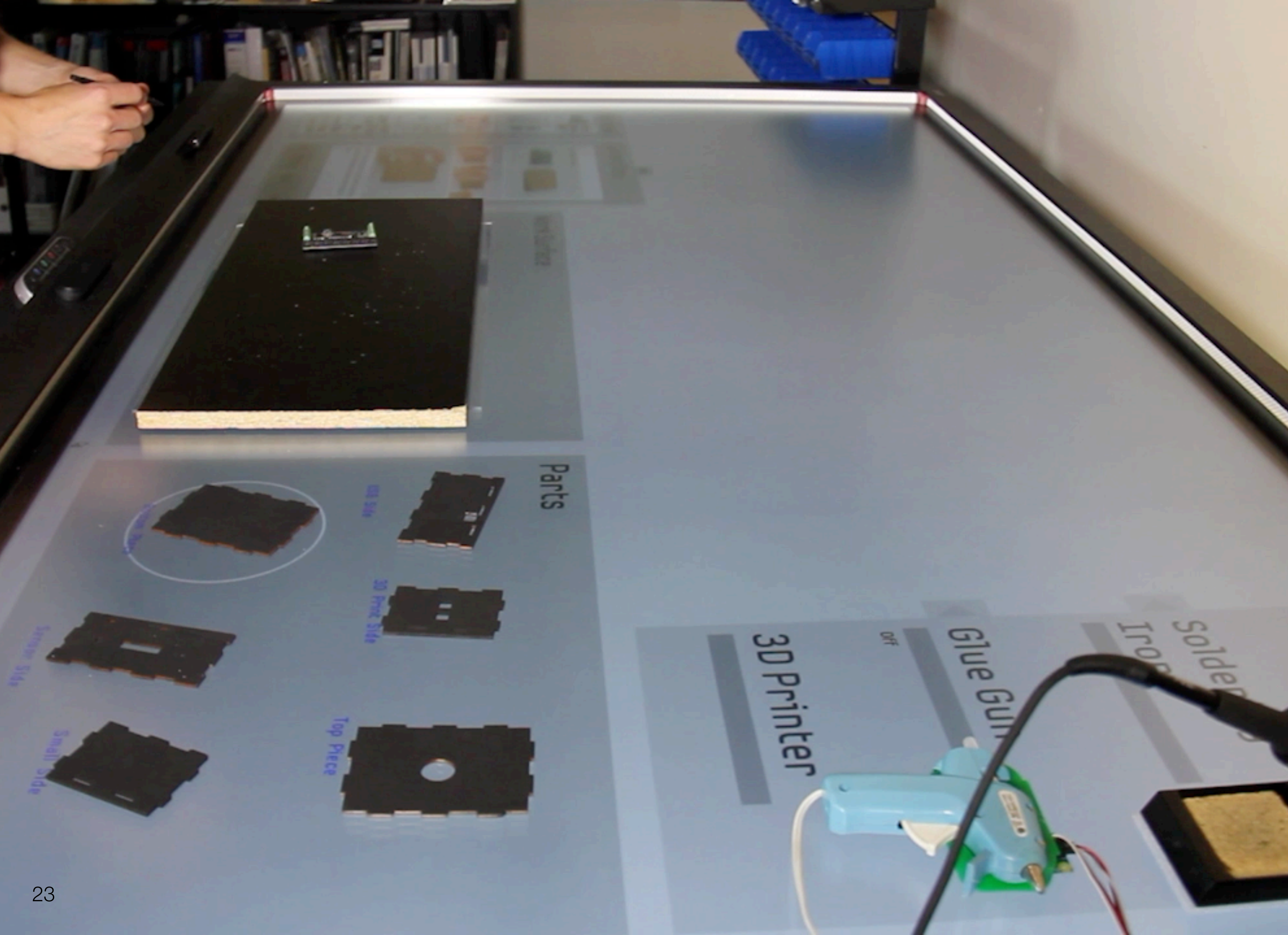


# Digital Fabrication Tools in Personal Fabrication

Marcel Lahaye

Tian et al.,  
MatchSticks:  
Woodworking  
through  
Improvisational Digital  
Fabrication, CHI'18

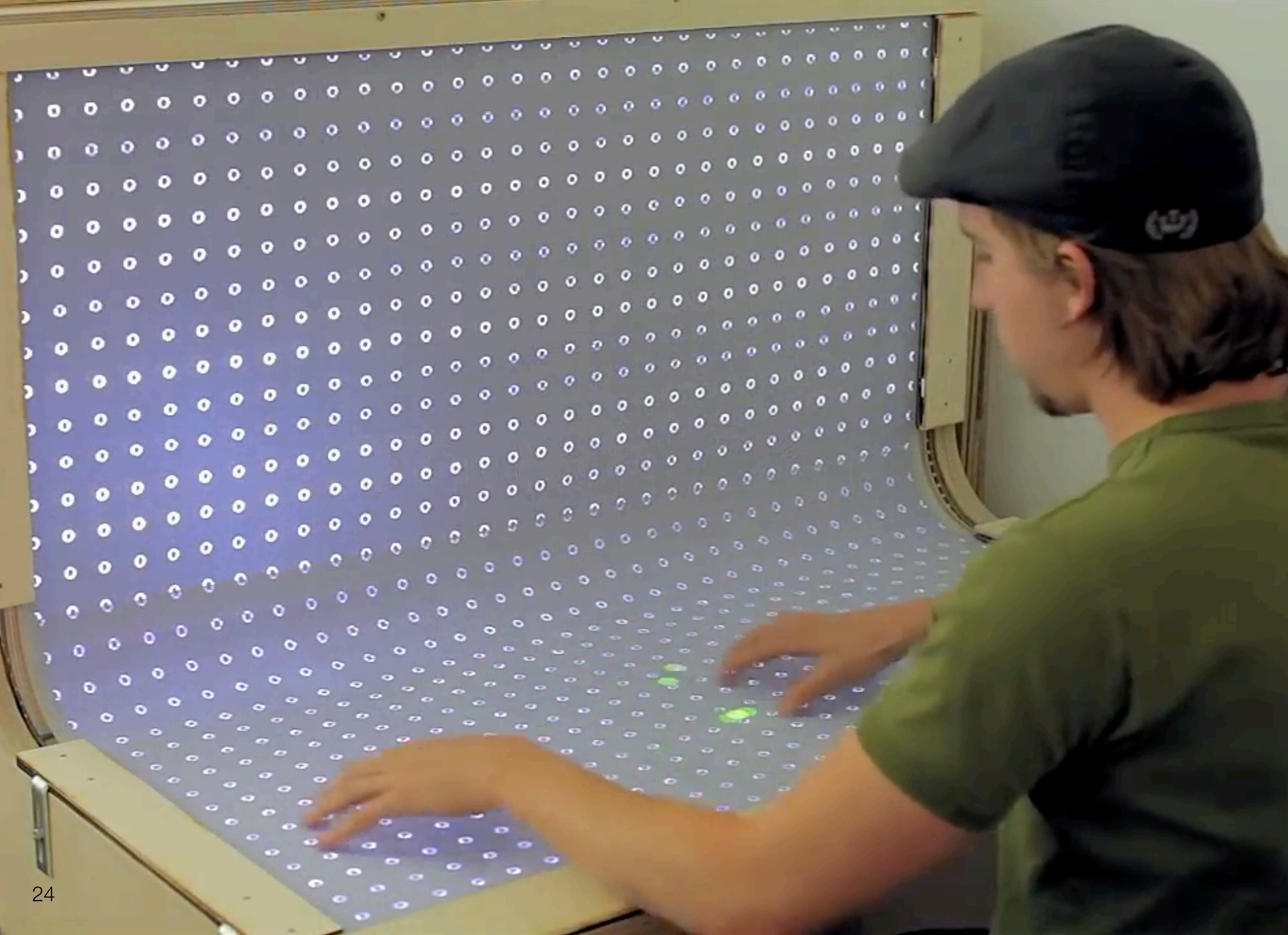




# Instructional Methods for Personal Fabrication Tasks

Marcel Lahaye

Knibbe et al., Smart Makerspace: An Immersive Instructional Space for Physical Tasks, ITS'15



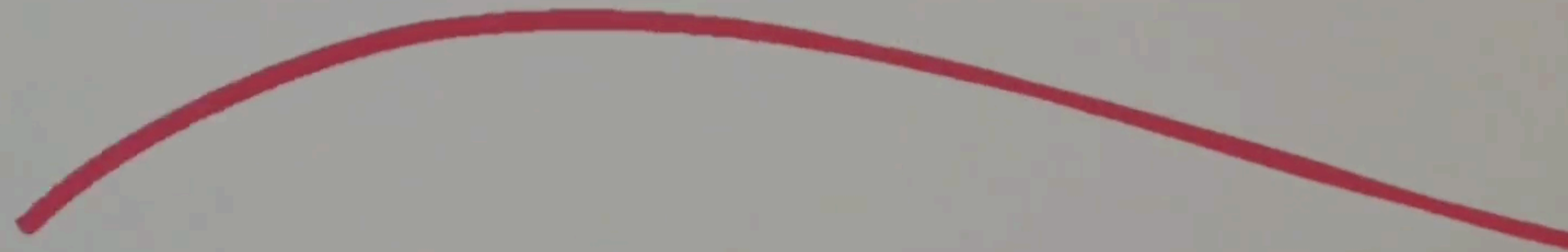
# Touch Input On Curved Surfaces

Marcel Lahaye

Voelker et al.,  
Understanding  
Flicking on Curved  
Surfaces, CHI'12



# Mid-air 3D drawing

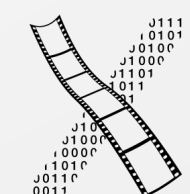


Raw video from HoloLens  
(Physical and virtual objects may appear to be spatially and temporally slightly out of sync)

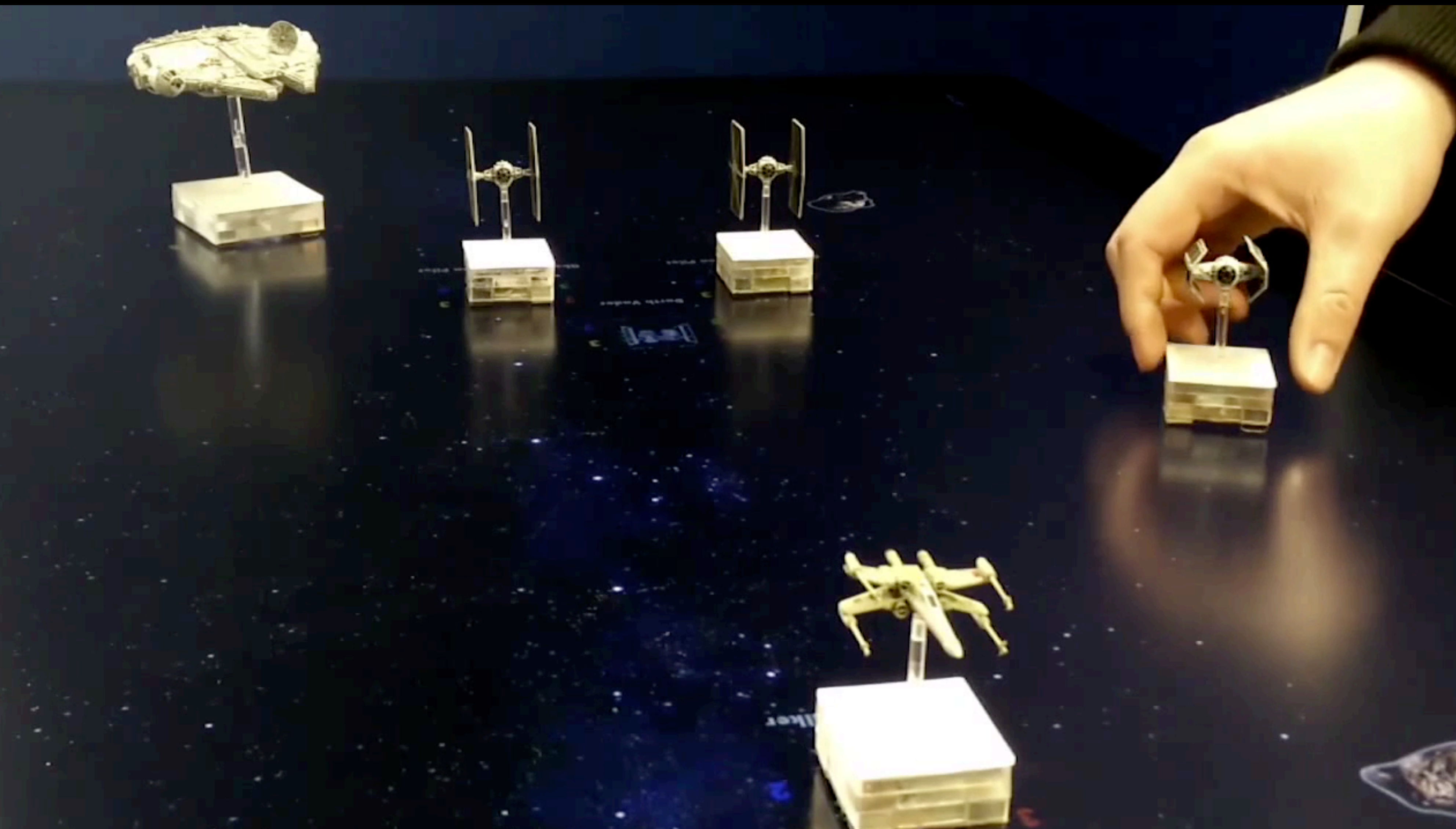
## Modeling in Augmented Reality

Philipp Wacker

Arora et al.,  
SymbiosisSketch:  
Combining 2D &  
3D Sketching for  
Designing Detailed  
3D Objects in Situ,  
CHI'18



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# Tangibles on Interactive Surfaces

Christian Cherek

Cherek et al.,  
PERCs Demo:  
Persistently  
Trackable  
Tangibles on  
Capacitive Multi-  
Touch Displays,  
ITS'14



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I noticed something curious when messing around with nested classes and outputting the name of the type to a console window. I was wondering if someone could explain it a bit for me. When calling `GetType()` on the main class, it returns what I would expect, which was the name of the class after the relevant namespaces. i.e. `Namespace.Namespace.Classname`

However, when I call a function from within the enclosing class to return the type of the nested class I get the value returned as this:

```
Namespace.Namespace.ClassNameEnclosing + ClassNameNested.
```

Why is it not simply returned as dot notation. Why the + symbol? I am just curious as to what is going on in the background that causes this notation.

[c#](#) [types](#) [nested-class](#)

[share](#) | [improve this question](#)

edited **Jun 11 at 14:18**

 **GEOCHET**  
11.6k ● 10 ● 37 ● 64

asked **Feb 2 at 10:29**

 **CSharpened**  
1,188 ● 3 ● 17  
100% accept rate




Dots are used to denote namespaces. The nested class is still in the same namespace, it's just nested within a class.

I can't tell offhand (from a brief study of ECMA-335) whether an unqualified type name which included a dot would actually be valid in IL; I *suspect* it would, but it would make all kinds of diagnostics harder to read.

[link](#) | [improve this answer](#)

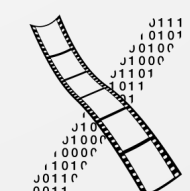
answered **Feb 2 at 10:32**

 **Jon Skeet**  
451k ● 131 ● 2036 ● 3395

# Reputation in StackOverflow

Krishna Subramanian

Shaowei et al., An Empirical Study on Developer Interactions in StackOverflow, SAC'13



# Interactive Jewellery: a design exploration

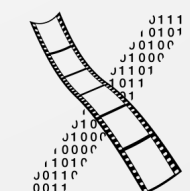
Anke Brocker

Oki et al., Sparklry:  
Designing "Sparkle"  
of Interactive  
Jewelry, TEI'17



**SPARKLRY**

:DESIGNING "SPARKLE" OF INTERACTIVE JEWELRY



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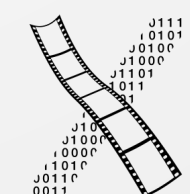
# From Physical to Virtual Worlds

Adrian Wagner

Roo et al., One  
Reality: Augmenting  
How the Physical  
World is Experienced  
by combining  
Multiple Mixed  
Reality Modalities,  
UIST'17

Level 0: Physical world

The first level is the physical world, which naturally supports manipulation and physical tools



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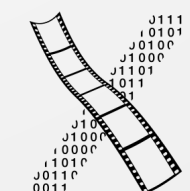
# Reachability in Mixed Reality

Sebastian Hueber

Hyub et al.,  
Projective  
Windows: Bringing  
Windows in Space  
to the Fingertip,  
CHI'18



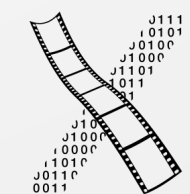
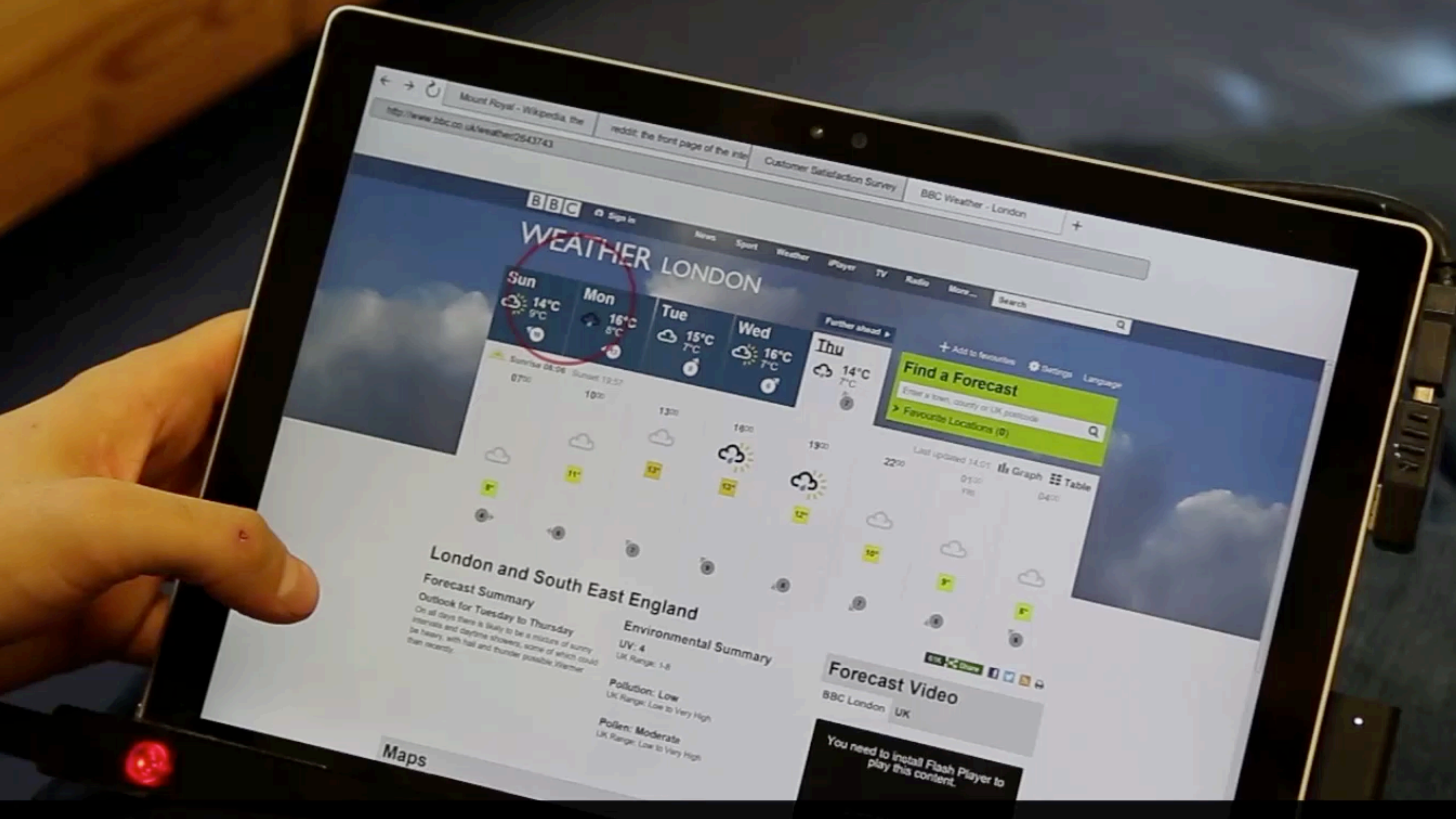
moves it closer to or away from the face to scale it,



# Gaze Interactions

Sebastian Hueber

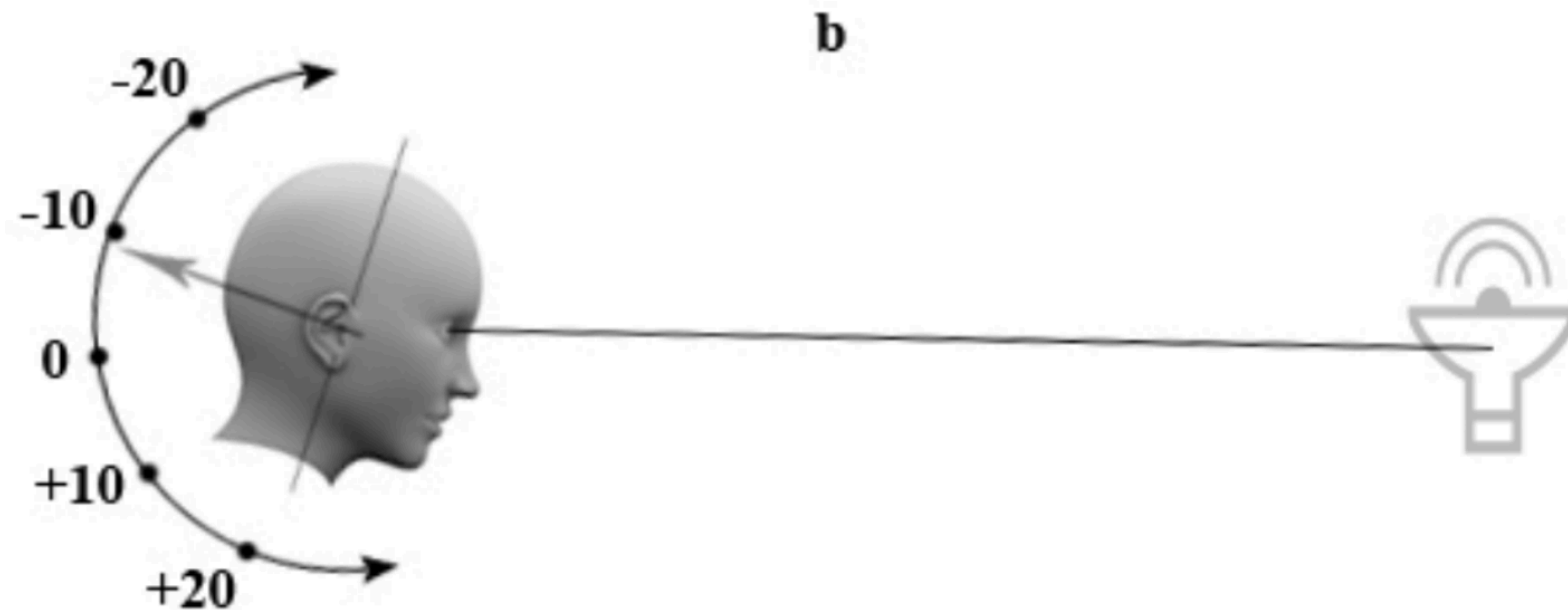
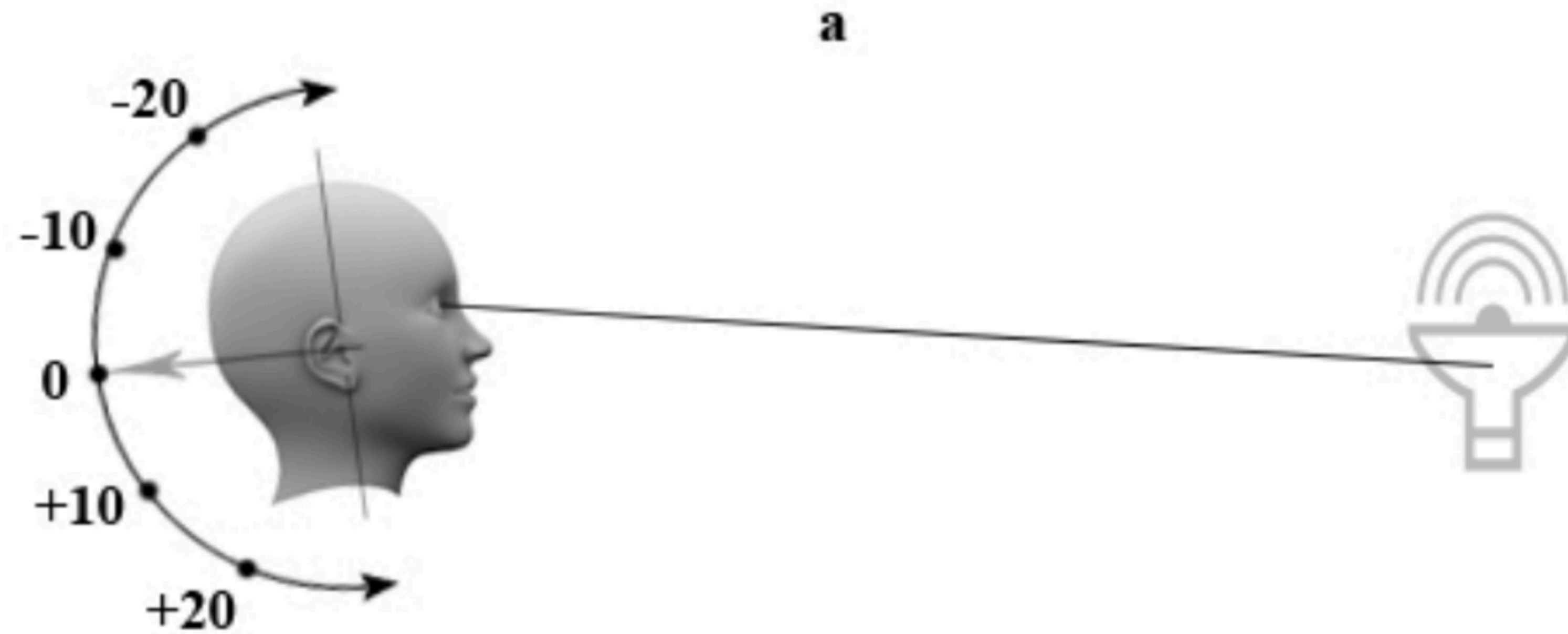
Pfeuffer et al., Gaze and Touch Interaction on Tablets, UIST'16



# Use your Head!

Sebastian Hueber

Mardanbegi et al.,  
Eye-based head  
gestures. ETRA'12

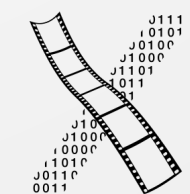




# Force Input on Touch Devices

Oliver Nowak

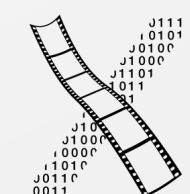
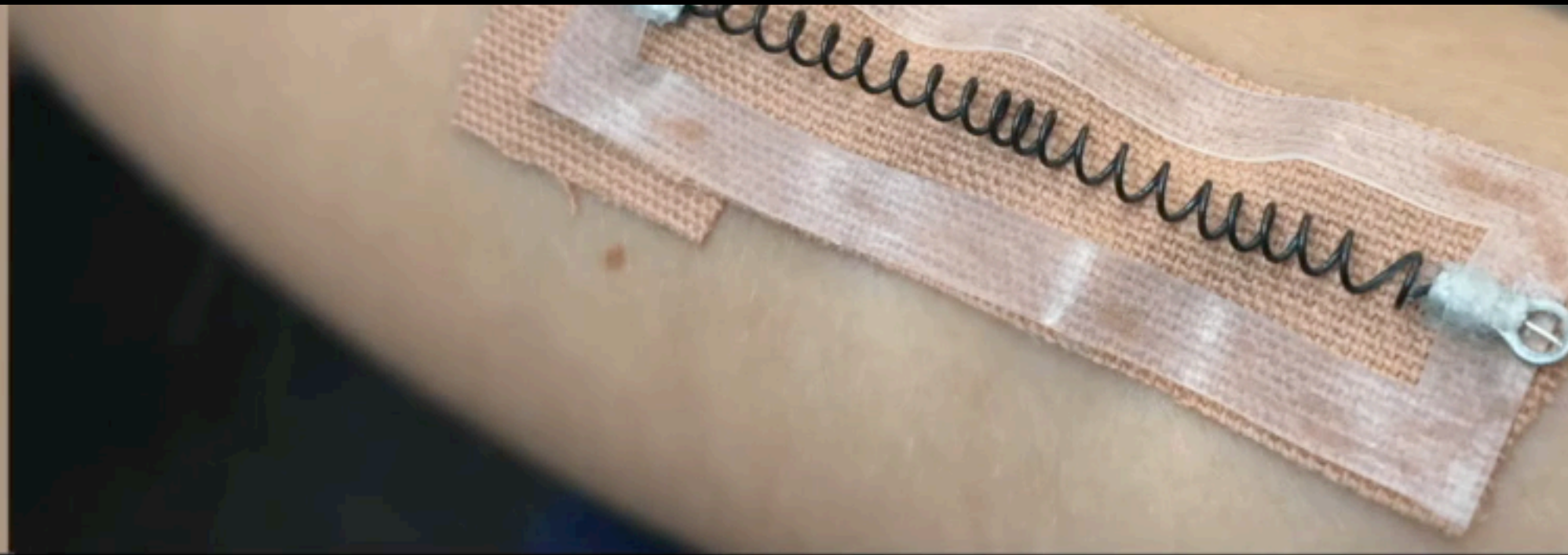
Corsten et al.,  
ForceRay: Extending  
Thumb Reach via  
Force Input  
Stabilizes Device  
Grip for Mobile  
Touch Input, CHI'19



# On-Skin Tactile Interfaces

Simon Völker

Hamdan et al.,  
Springlets:  
Expressive,  
Flexible and Silent  
On-Skin Tactile  
Interfaces, CHI'19



# Next Steps

- Take out the signed *Erklärung zur Seminararbeit*
- Vote for your topic (today)
- Wait for your topic (Next Week)
- Contact your Supervisor
- Start with the literature review

<http://hci.rwth-aachen.de/pdui>

# Topics

#	Topic	Literature Review Date	Presentation Date	Supervisor
1	Tangible User Interfaces in Personal Fabrication	04.10.2019	21.11.2019	Marcel Lahaye
2	Digital Fabrication Tools in Personal Fabrication	04.10.2019	21.11.2019	Marcel Lahaye
3	Instructional Methods for Personal	10.10.2019	28.11.2019	Marcel Lahaye
4	Touch Input On Curved Surfaces	10.10.2019	28.11.2019	Marcel Lahaye
5	Modeling in Augmented Reality	17.10.2019	05.12.2019	Philipp Wacker
6	Tangibles on Interactive Surfaces	17.10.2019	05.12.2019	Christian Cherek
7	Reputation in StackOverflow	24.10.2019	12.12.2019	Krishna Subramanian
8	Interactive Jewellery & Accessories	24.10.2019	12.12.2019	Anke Brocker
9	From Physical to Virtual Worlds	31.10.2019	19.12.2019	Adrian Wagner
10	Reachability in Mixed Reality	31.10.2019	19.12.2019	Sebastian Hueber
11	Gaze Interactions	07.11.2019	09.01.2020	Sebastian Hueber
12	User your Head!	07.11.2019	09.01.2020	Sebastian Hueber
13	Force Input on Touch Devices	14.11.2019	16.01.2020	Oliver Nowak
14	On-Skin Tactile Interfaces	14.11.2019	16.01.2020	Simon Voelker

