Audrey Girouard

Serendipity and People: Key to My HCI Research Directions
You can succeed without an extensive research plan.

People

Research projects and directions come from significant encounters.

- students
- supervisors
- collaborators 
  & colleagues

[even if my Discovery Grant is sound and funded]
Undergraduate in Software Engineering
École Polytechnique de Montréal

2001-2005

Tufts University
MCS and PhD in Computer Science

2005-2010

Postdoctoral Fellowship
Queen’s University

2010-2011

Carleton University
Assistant Professor

2011-2016

Associate Professor

2016 -
CHANGING LINES?

USE YAH BLINKAH
Brain Computer Interfaces
Passive adaptation using mental workload
Graphical User Interfaces

Direct Manipulation

[Shneiderman 1983]

[Hutchins, Hollan & Norman 1986]
THE REALITY OF REALITY-BASED INTERACTION

UNDERSTANDING THE IMPACT OF A FRAMEWORK AS A RESEARCH TOOL
PaperPhone
Understanding the Use of Bend Gestures in Mobile Devices with Flexible Electronic Paper Displays

https://youtu.be/Rl-qygUE2c
Deformable User Interfaces
- Accessibility
- Deformable
- Shape-shifting
- Displayless
- Flexible
- Bendable
- Fabrication
- Wearable
- Soft/textile
- Brain Computer Interface (BCI)

Significant contributions impact lives of people.

Ontario ERA: Rehabilitation/Healthcare
- Blind/low vision
- Accessibility work
  - Flexible/soft interface
  - Fabrication: 3D printing, sewing machines, embroidery
  - CLUE

- PaperPhone: Mobile + deformation
- FlexStyle (non-mobile)

2010
2015
2020
2025

RBI
- RBI 2.0
- to CH1

DG: Flexible UI

SoNelesen
Ohsara/BendPass
Hat: Dura
Typhlex (Trans)

Dana
BendyPass with Blind

[Collaborations]
Creative Interactions Lab @ Carleton University

Outside excursions, of-site meetings, and food outings enable mingling, which leads to collaboration and engagement with each other.

What is the use of the space you use on a weekly basis? In this lab, we use the lab for brainstorming, prototyping, testing, and iterating our ideas. We also use it for group discussions, presentations, and workshops. The space is equipped with all the necessary tools and equipment for our projects.

How many people are in the lab, and what is the most enjoyable and educational activity? In the lab, we typically have a team of 6 to 8 people working together. The most enjoyable and educational activity is brainstorming sessions, where we discuss new ideas and concepts. These sessions are always collaborative and constructive.

What’s your favorite tool or tech to work with? Our favorite tool is the 3D printer. It allows us to bring our ideas to life and create physical prototypes. We also love using the laser cutter for creating custom designs.

What’s your biggest challenge? Our biggest challenge is managing time and resources efficiently. We have a lot of projects going on simultaneously, and we need to balance our time between them.

Do you work on your projects alone or with others? We work both alone and in groups. It depends on the project and the stage of development. We believe in collaboration, but we also appreciate the creative freedom of working solo at times.

What are you currently working on? We are currently working on a range of projects, including a new product design, a community outreach program, and an interactive installation for a local museum. Each project presents its own unique challenges and opportunities.

Has anything about the lab changed in the last few weeks? Yes, we’ve added a new piece of equipment to our lab and rearranged some of the furniture to optimize workspace. We’ve also implemented new safety measures in response to the current health guidelines.

How did you become interested in this field? Our interest in this field came from a combination of personal passions and professional experiences. We have always been fascinated by technology and innovation, and we’ve had the opportunity to work on projects that allow us to explore and experiment.

What do you enjoy most about the lab? We enjoy the collaborative environment, the support from our peers, and the opportunity to learn and grow together as a team. The lab is a space where we can share ideas, test concepts, and bring our visions to life.

References:
1. Interactions.org.
2. Carleton University Interactions Lab.
3. https://3dinteractionslab.com/

Do you work on your projects in the lab, or remotely? We work in the lab most of the time, but we also have remote access and can work from home when needed.

Do you collaborate with other groups? Yes, we collaborate with other groups both within the university and with external organizations. We find that collaboration can lead to new and exciting ideas.

Do you have a mentor or advisor in this field? Yes, we have several mentors who provide guidance and support. They are experts in their field and have a wealth of knowledge and experience to share.

Do you have any advice for students interested in this field? We recommend getting involved in research and design projects early on. It’s a great way to gain hands-on experience and build a portfolio of work. Additionally, staying up-to-date with the latest technologies and trends can help you stay competitive in the field.
Can flexible displays improve how we interact with our devices?
Can deformable interactions improve how we interact with our devices?
https://youtu.be/BqYLLEvImN4
Deformable User Interfaces
Deformation Interactions + Games
Bendy

[Lo & Girouard, TEI 2017]

https://youtu.be/mgG7E7p8SoY
Bendtroller

https://youtu.be/5dZoi0y8Lag
Deformation Interactions + Accessibility
Typhlex:
Deformable Input for Blind Users in Controlling a Mobile Screen Reader

https://youtu.be/giJYx8l2y-c
**BendyPass:**
Studying Bend Password Authentication With People With Vision Impairment
Bend or PIN

Studying Bend Password Authentication with People with Vision Impairment

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Sara Nabil
Audrey Girouard

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Carleton University
Ottawa, ON, Canada

https://youtu.be/BvXCXctejGw
NSERC CREATE
Research and Education in Accessibility, Design, and Innovation (READi)

https://carleton.ca/readi/
NSERC CREATE Collaborative Learning of Usability Experiences (CLUE)

http://carleton.ca/clue/
Deformation Interactions + Non-mobile devices & Wearables
FlexStylus

https://youtu.be/w_HinxtK4wI
https://youtu.be/WwkOGvK3Uic

[Fellion, Eady & Girouard, CHI EA 2016]
[Fellion, Pietrzak, Girouard, UIST 2017]
Wearable Bits

Scaffolding Creativity with a Prototyping Toolkit for Wearable E-textiles
Punch-Sketching E-textiles

Exploring Punch Needle as a Technique for Sustainable, Accessible, and Iterative Physical Prototyping with E-textiles

Lee Jones¹, Miriam Sturdee², Sara Nabil³, Audrey Girouard¹

1. Carleton University
2. Lancaster University
3. Queen’s University

https://youtu.be/kUyb8eGggmU
Soft Speakers

Digital Embroidering of DIY Customizable Fabric Actuators

Sara Nabil
Lee Jones
Audrey Girouard
Can deformable interactions improve how we interact with our devices?
More Creative Interactions Lab research

Accessibility Research

Wearables

Ideation Workshops

E-textiles

Fabrication
You can succeed without an extensive research plan

Research projects and directions come from significant encounters

People

- collaborators & colleagues
- supervisors
- students

Serendipity

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