

## Personal details.

Gilles Bailly

Born 27/07/1982 (34 years old), French citizenship, 2 children.

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## Scientific profile

My research is in the field of Human-Computer Interaction (HCI) and aims at understanding how users develop their expertise to select commands. To address this challenge, I adopt multiple approaches: First, I elaborate models of performance and knowledge to capture consistencies in users' behaviors and predict the performance of an interface; second, I design novel interaction techniques (both software and hardware) to improve user experience. These interaction techniques also serve as a vehicle to characterize interactive mechanisms and enrich models. Finally, I develop tools that collect data in order to guide the design of interaction techniques and parametrize models. While I consider multiple platforms (mobile devices, wearable computing, public displays, tabletops, interactive television, etc.), I primary focus on desktop workstations, traditional graphical user interfaces and gesture-based interfaces (multi-touch gestures and mid-air gestures). Finally, my research is often multi-disciplinary requiring collaborations in cognitive science, Information Theory, mechanical engineering, bio-informatics or geographical systems.

## Positions

2016 Full-Time junior researcher at CNRS; Sorbonne Université, UPMC, ISIR, France.

2013 Full-Time junior researcher at CNRS; LTCI – Télécom ParisTech, France.

2012 Post. Doc. at Max-Planck Institute for Informatics, Germany, with Antti Oulasvirta

2011 Post. Doc. at Telekom Innovation Lab. and TU Berlin, Germany, with Sebastian Möller

2009 Post. Doc. at Télécom ParisTech, France with Eric Lecolinet

## Education

2009 PhD in Computer Science, Université Joseph Fourier, Grenoble, France (26 may 2009)

Advisors: Laurence Nigay and Eric Lecolinet

Dissertation: Menu Techniques: Characterization, Design and Evaluation

2005 MSs in computer science at Univ. Joseph Fourier (Intelligence, Interaction, Information) *with honors*

2005 Diploma from engineering school, PolyTech Grenoble *with honors*

## Awards

*[CHI](#) and [MobileHCI](#) are highly competitive peer-reviewed conferences (acceptance rate around 20%)<sup>1</sup>.*

*CHI is the International conference on Human Factors in Computing Systems. It is the primary publication venue in Human-Computer Interaction (HCI) with 3000 attendees. MobileHCI is the International Conference on Human-Computer Interaction with Mobile Devices and Services. ~300 attendees.*

2016 CHI Best Paper Honorable Mention Award (Top 5% over ) TouchToken project (Morles et al. 16)

2015 CHI Best Paper Award (Top 1%) iSkin project (Weigel et al. 15)

2014 CHI Best Paper Honorable Mention (Top 5%) Model of menu performance project (Bailly et al. 14)

2014 MobileHCI Best Paper Honorable Mention (Top 5%) Cuenesics project (Walter et al. 14)

2013 CHI Best Paper Award (Top 1%) Screenfinity project (Schmidt et al. 13)

2013 CHI Best Paper Honorable Mention (top 5%) StrikeAPose project (Walter et al. 13)

2012 CHI Best Paper Award (Top 1%) LookingGlass project (Mueller et al. 12)

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<sup>1</sup> In Human-Computer Interaction, conference proceedings are the preferred publication venue. They are more timely, have higher visibility, require more novelty, and overall have a greater impact than journals. Top tier conferences are very selective and rigorously review, involving at least five independent reviews, at least one 'meta' review, a rebuttal period, and a face-to-face program committee meeting. Journals are typically used to publish longer papers which tie together multiple experiments or techniques. Full papers in these conferences are archival contributions equivalent to journal publications in other fields

## Service activities

### PC chair

- PC co-chair at the national IHM/IA workshop with N. Sabouret (~60 attendees), Paris, 2017
- PC co-chair at the national IHM/IA workshop with S. Huot and P. de Loor (60 attendees), Paris, 2015
- PC chair of the EIT ICT Labs Smart Spaces Workshop (50 attendees), Berlin, 2013

### Associate chair <sup>2</sup>

- [CHI](#) conference, committee Interaction Techniques (~3000 attendees): 2017, 2018
- [CHI](#) conference, committee Interaction Using Specific Capabilities and Modalities (~3000 attendees): 2015, 2016
- MobileHCI (~200 attendees), Florence, 2016
- [ITS](#) (~200 attendees), Dresden, 2014
- [IWOAR](#) workshop, 2015-2016
- The national [IHM](#) conference (~100 attendees): 2011, 2014, 2015

### Publicity chair

- Publicity chair at the national [IHM](#) conference (~100 attendees): 2013

### Reviewers

From 2008, I regularly review for the main journals and conferences in my area:

Journal: ToCHI, IHCS, TVCG, JMUI

Conferences: CHI, UIST, Ubicomp, AVI, ITS, MobileHCI, EICS, INTERACT, 3DUI, ICMI,

## Administrative Activities

- 2017 - Member of the "Web committee" of the ISIR Laboratory
- 2016 - Member of the "local CNRS candidat training committee"
- 2014-2015 Board member of the CNRS LTCI Laboratory
- 2013-2016 Organizer of the bimonthly Internal Seminar (20 attendees) at Télécom ParisTech
- 2009-2011 Board member of the [French association of Human-Computer Interaction](#), (143 members)
  - Deputy secretary from 2007 to 2009

## Evaluation committees and invited expertise

- 2017 Reviewer for STIC department projects of the University Paris-Saclay
- 2017 Reviewer for the french AAP Digiteo Digicosme Research Agency
- 2016 Member of the examination commission for Assistant Professor at the University of Toulouse
- 2016 Reviewer for the French National Research Agency, ANR (France)
- 2016 Member of the examination commission of the AAP Digiteo Digicosme Research Agency
- 2015 Member of the examination commission for INRIA Saclay (France)
- 2015 Member of the examination commission for Assistant Professor at the Univeristy Paris-Saclay (IUT de Saclay)
- 2015 Reviewer for the Singapore-MIT Alliance for Research and Technology (Singapore)
- 2014 Reviewer for the Austrian Science Foundation
- 2014 Reviewer for the French National Research Agency, ANR (France)

## Ph.D. Juries

- Paul Issartel. *Nouvelles Approches pour la portabilité, la non-intrusivité et l'accessibilité des interfaces de manipulation 3D*. April 3rd 2017. Examiner.
- Sara Bouzit. *Plasticité de l'interaction homme-machine: présentation à l'utilisateur, une question de compromis*. June 15th 2017. Examiner

## Teaching

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<sup>2</sup> Associate chairs assign 3 reviewers for each paper, lead discussions and write meta-review. They are in charge 10-20 papers.

- I teach undergraduate and graduate courses at Telecom ParisTech, Univ. Pierre and Marie-Curie and Institute Villebon on various topics such as “Human-Computer Interaction”, “Research Project”, “Object programming with Java”, “C++”. *Total: ~100h/year.*

## Supervising

- Ph.D students. Co-supervision is mandatory before passing the HDR (“habilitation”) in France. I obtained derogation for E. Giannisakis because I will pass my “habilitation” in 2016-2017.
  - Marc Teyssier. 30% (with Catherine Pelachaud et Eric Lecolinet) Dec. 2016 -  
Title: *Understanding and Designing Virtual and Real Skin Contact*
  - Emmanouil Giannisakis. 100%. Dec. 2015-  
Title: *Modeling user expertise in interactive systems.*  
Publications: [CHI'17a]
  - Rafael Morales. 30% (with Caroline Appert and Emmanuel Pietriga), Oct. 2014- Oct. 2017.  
Title: *Rich Multi-Touch Input with Passive Tokens*  
Publications: [CHI'16b], [CHI'17c]
  - Emeline Brulé. Accessibility, 70% (with Annie Gentes), Oct. 2014 - Oct. 2017.  
Title: *designing for children with visual impairment*  
Publications: [CHI'16c], [IHM'15b]
  - Thibaut Jacob. 3D interaction, 90% with (Eric Lecolinet) Nov. 2013- Sept. 2017.  
Title: *Desktop Camera Motion Using Rotational Head Movements*  
Publications: [SUI'16a], [IHM'14b]
- Master students
  - Mengyang Wang, 100%, 2017
  - Haoyu Yuan, 100%, 2017
  - David Jan Mercado, 50% (with Catherine Pelachaud), 2015  
1 Work-In-Progress at ACM CHI: [CHI'16e]
  - Thor Bossuyt, 50% (with Joerg Müller), 2012  
1 short paper at ACM MobileHCI: [Mobile'14a]
  - Niklas Hillgren, 50% (with Joerg Müller), 2012  
1 short paper at ACM MobileHCI: [Mobile'14a]
  - Maurice Ten Koppel, 50% (with Joerg Müller), 2011  
1 full paper at ACM CHI: [CHI'12b]
  - Robert Walter, 50% (with Joerg Müller), 2011  
1 full paper at IFIP INTERACT: [INTER11]
  - Ning Tongyan, 50% (with Joerg Müller), 2011  
1 full paper at IFIP INTERACT: [INTER11]
  - Alexandre Viard, 90% (with Eric Lecolinet), 2010  
1 full paper at Springer GIS: [GIS'11]
  - Simon Micollier, 90% (with Eric Lecolinet), 2010
  - Mathieu Dalens, 90% (with Eric Lecolinet), 2010
- Bachelor students
  - Sidharth Sahdev, 100%, 2015  
1 full paper at ACM CHI: [CHI'16a]
  - Sarthak Ghosh, 100%, 2014  
1 Work-In-Progress at ACM CHI: [CHI'15c]
  - Constantin Schmidt, 50% (with Joërg Müller), 2013  
1 full paper at ACM CHI: [CHI'13b]
  - Dieter Eberle, 50%, 2013

## Management of funding resources

- CAMI Labex: 2017 - Surgical Cockpit  
*Type: Funding by the French Labex CAMI*

*My role:* Participant

*Funding:* 350K euros

- **SMART Labex:** 2017 - Situated Analysis of Human-Machine Interaction  
*Type:* Funding by the French Labex SMART  
*My role:* Participant  
*Funding:* 179K euros
- **ANR JCJC Grant:** 2017- Deriving Performance-Optimized Gestural Interaction.  
*Type:* Funding by the French National Research Agency for Young Researchers (~20% acceptance rate)  
*My role:* *Principal Investigator*  
*Funding:* 190K euros.
- **BIRI Grant:** 2016-, Understanding and Designing Virtual and Real Skin Contact  
*Type:* Funding by the Institute Mines-Telecom.  
*My role:* participant  
*Funding:* 109K euros. It covers one Phd student
- **BIRI Grant:** 2015-, Modeling User Expertise in Interactive Systems.  
*Type:* Funding by the Institute Mines-Telecom.  
*My role:* Principal Investigator  
*Funding:* 109K euros. It covers one Phd student
- **PEPS JCJC:** 2015, Model of performance for command selection: Validation with an eye-tracker.  
*Type:* Funding by FRENCH CNRS  
*My role:* Principal Investigator.  
*Funding:* 6K euros. It covers materials and missions
- **ANR Accessimap years:** 2014–, Interactive and collaborative maps for visually impaired people.  
*Type:* Funding by the French National Research Agency (strong selection process)  
*My role:* co-leader of the task 2.4.  
*Funding:* 10K euros.
- **ANR Edison3D years:** 2013–, 3D temporal mixing.  
*Type:* Funding by the French National Research Agency, strong selection process.  
*My role:* Co-leader of the task 4.  
*Funding:* 200k euros

## International invited talks

- **Plenary Keynote talk** during the 11th Edition of the [International Joint Conference on Computer Vision, Visualization and Computer Graphics Theory and Applications](#). Rome, February 2016. 400 attendees
- Invited talk at the [wearable technologies conference](#) 2013. February 4 2013; Munich. 150 attendees.
- Invited talk at the OpenLabs of Deutsche Telekom Workshop: "New Interaction Paradigms". May 25, 2011; Berlin. 100 attendees.
- Invited talk at the UCLIC Research Seminar Series, UCL, UK. March 2014
- Invited talk at the HCI seminar of the University of Birmingham, UK. March 2014

## National invited talks

- Invited talk at the [French symposium for Junior Researcher in HCI](#). ~20 PhD students. June 2015, July 2017
- Invited talk at the HCI seminar of the University of Toulouse, France. March 2014.
- Invited talk at the 3rd Workshop on [Gestural interaction and Haptic feedback](#). November 13, 2012; Tourcoing. 500 attendees.
- Invited talk at the workshop on multi-touch technologies ([Rencontres Européennes Autour du Multi-touch](#)) organized by Silicon Sentier. March 21, 2009. 50 attendees.

## Grants

2016 ANR JCJC Grant from the french National Agency for research (190K euros; 4 years). ~20%

acceptance rate

- 2015 BIRI grant from Institut Mines Telecom for hiring a 1 PhD student during 3 years. 30% acceptance rate.
- 2015 PEPS JCJC grant from CNRS for materials and travelling (6K euros).
- 2014 Tax-free Scholarship from the Max-Planck Institute (2300€/ month; 24 months)
- 2011 [Alexander Von Humboldt Fellowship](#) (2250€/month; 18 months). 30% acceptance rate.
- 2005 MENRT from the University Joseph Fourier, Grenoble. Scholarship for a three-year doctoral position. ~30% acceptance rate

## Research highlights

The following 5 publications are published in the two best HCI venues (CHI and UIST).

1. **Gilles Bailly**, Antti Oulasvirta, Duncan P. Brumby, Andrew Howes (2014)  
Model of Visual Search and Selection Time in Linear Menus  
ACM CHI'14, 10 pages. **Best Paper Honorable Mention** (top 5%).  
*We elaborated a mathematical model of performance and collected an extensive dataset. The novel aspect is that the model is expressed as probability density distribution of gaze, which allows for deriving item selection time and total menu selection time.*
2. **Gilles Bailly**, Antti Oulasvirta, Timo Koetzing, Sabrina Hoppe (2013).  
MenuOptimizer: Interactive Optimization of Menu Systems.  
ACM UIST'13, 11 pages.  
*We contribute the first design tool relying on optimization method for interactively assisting in menu design with an optimizer in the loop. It addresses the key challenges of (1) to support designers' abilities to cope with uncertainty, define constraints, and recognize good solutions and (2) allow designers to delegate combinatorial sub-problems to an optimizer that should solve them rapidly enough not to disrupt the process of design.*
3. Sylvain Malacria, **Gilles Bailly**, Joel Harrison, Andy Cockburn, Carl Gutwin (2013).  
Promoting Hotkey Use through Rehearsal with ExposeHK.  
ACM CHI'13, 10 pages.  
*We designed a novel interaction technique to favor hotkey usage based on the principle of rehearsal. ExposeHK is 36% faster than other shortcut techniques.*
4. Robert Walter, **Gilles Bailly**, Joerg Moeller (2013).  
StrikeAPose: Revealing Mid-Air Gestures on Public Displays  
ACM CHI'13, 10 pages. **Best Paper Honorable Mention** (top 5%).  
*We investigated how to reveal an initial mid-air gesture on public display to enabled advanced interactions. We proposed several strategies to communicate interaction and tested them in a field study.*
5. **Gilles Bailly**, Joerg Mueller, Michael Rohs, Daniel Wigdor, Sven Kratz. (2012)  
ShoeSense: A New Perspective on Hand Gestures and Wearable Applications.  
ACM CHI'12, 10 pages.  
*We designed gesture-based shortcuts in the context of wearable computing. The novelty is a new perspective for eyes-free interaction enabling relaxed and discreet as well as large and demonstrative hand gestures. ShoeSense received an important press coverage: more than 6000 views on Youtube. 10 international blogs including PC world, BloombergBusinessweek, IT Business, CNET, ACM TechNews.*

## Major collaborations from 2009

Prof. Andrew Howes, Univ. of Birmingham, UK	Models of performance (3 CHI)
Dr. Duncan Brumby, UCL, UK	Models of performance (2 CHI)
Dr. Daniel Wigdor, Univ. of Toronto, Canada	Novel input devices (2 CHI)
Dr Antti Oulasvirta, Aalto University, Finland	Optimization of menu systems (1 UIST, 3 CHI)
Dr Sylvain Malacria, INRIA Lille, France	Desktop Interaction techniques (3 CHI)
Dr Thomas Pietrzak, University of Lille, France	Novel input devices (2 CHI)
Dr. Joerg Müller, University of Aarhus, Denmark	Public displays (5 CHI)
Dr. Eric Lecolinet, Telecom ParisTech, France	Menu techniques (1 CHI, 1 IJHCS, 1 InfoVis)

## **Scientific communication**

### **Magazines et Journaux**

- ACM Interactions. (2014). Bailly, G., Oulasvirta, A. [Towards Optimal Menu Designs](#). 4 July 2014.
- Tu Intern (2011). Cathrin Becker. ["Herr der grossen Gesten"](#). 9 May 2011.
- Figaro (2009). Multi-touch gestures. May 2009.

### **Web**

- Several projects such as ExposeHK, ShoeSense, Iskin or LivingDesktop
- Thousands of Youtube views for projects such as ISkin or ShoeSense

### **Manifestations**

- Talk. "Qu'est ce qu'un chercheur en IHM" for the students from Frateli (Paris) 2014 - 2015
- Talk. "Qu'est ce qu'un chercheur en IHM" for the students of UIT de Cachan. 2014.
- Demonstration. "Nuit de la Science" (Lange Nacht der Wissenschaften). June 2nd, 2012; Berlin. 1000 participants.
- Visit. Visit of Deutsche Telekom for the students of IUT de Cachan. January 16th, 2012; Berlin.

## *Curriculum Vitae*