

# Jérémy Frey

Researcher in computer science

## contact

Ullo  
40 Rue Chef de Baie  
17000 La Rochelle, France

jfrey@ullo.fr  
<http://phd.jfrey.info/>  
[twitter://jfrey\\_xx](https://twitter.com/jfrey_xx)

## languages

French: mother tongue  
English: fluent  
Spanish: basic

## programming

object-oriented (Java, C++, C#)  
multi-paradigm (python, JS)  
imperative (C, Pascal)  
functional (Lisp)  
logic (Prolog)

## skills

HCI (3DUI, TUI, VR, ...)  
brain-computer interface  
physiological computing  
signal processing  
machine learning  
statistics  
ergonomics  
artificial cognition  
natural language processing  
SQL  
unix  
wearables  
DIY enthusiast

## hobbies

literature  
photography  
martial arts (pencak-silat)  
swimming, running

## interests

I explore how physiological computing can contribute to human-computer interaction and foster new communication channels among the general public. I came to think that the purpose of those technological artifacts is to enhance well-being and facilitate human relationships on the whole. Or at least this is the path into which I try to venture, hacking my way.

After a PhD in computer science that I conducted at Inria in the Potioc research team, I held a position of teaching assistant (ATER) in the university of Bordeaux and worked as a research engineer for Inria, affiliated to the Athena research team. By the end of 2016 I joined Ullo as the head of the research and innovation department.

## education

- |      |   |                        |
|------|---|------------------------|
| 2015 | <b>PhD Computer Science</b>   | University of Bordeaux |
|      | “Leveraging human-computer interactions and social presence with physiological computing”.<br>Advisors: Martin Hachet & Fabien Lotte. Research team: Potioc (Inria) |                        |
| 2011 | <b>Master Cognitive Science</b>   | University of Bordeaux |
|      | With honors, ranked second  |                        |
| 2009 | <b>Bachelor Computer Science</b>  | University of Bordeaux |

## internships

- |      |   |   |
|------|---|---|
| 2015 | <b>Combining head-mounted displays with EEG</b>   | Musae Lab, INRS, Montreal   |
|      | Supervisor: Tiago H. Falk. Duration: 2 months.  |   |
| 2011 | <b>Investigation of cognitive and motor deficits in a robot-embodied model of the basal ganglia</b> | IMN (institute of neurodegenerative diseases), University of Bordeaux |
|      | Supervisor: André Garenne. Duration: 10 months.   |   |
| 2010 | <b>Conditioning robots</b>  | EA-487 laboratory, University of Bordeaux                             |
|      | Supervisor: Jean-Marc Salotti. Duration: 10 weeks.  |   |

## reviewing

Transactions on Computational Intelligence and AI in Game; Pattern Recognition; ACM Journal on Computing and Cultural Heritage; Affective Computing and Intelligent Interaction; ACM CHI

## supervision

- |      |  |  |
|------|--|--|
| 2016 | <b>Manon Bonnet-Save</b>   | first year in engineering school ENSC                                |
|      | Study the impact of flow on motor imagery based BCI. Duration: 2 months. Co-supervising.   |  |
| 2015 | <b>Maxime Daniel</b>   | M.S. computer science, 2nd year, University of Bordeaux              |
|      | Create a virtual environment that could validate the use of electroencephalography as an evaluation tool for 3D interactions. Duration: 6 months. Co-supervising with Immersion company. |  |
| 2015 | <b>Maxime Duluc</b>  | last year in engineering school “Institut d’Optique Graduate School” |

Objective: create an instrumented version of the tangible interface of electroencephalographic signals' visualization "Teegi". Duration: 6 months.

2015 **Alexis Gay** M.S. design, 2nd year, University Bordeaux Montaigne

Objective: co-designing a tangible representation of inner states, "Tobe". Duration: 2 months. Co-supervising.

2014 **Aurélien Appriou** M.S. cognitive science, 1st year, University of Bordeaux

Objective: investigate the use of a brain-computer interface as a real-time measuring tool of visual comfort during the viewing of stereoscopic images. Duration: 2 months.

2013 **Léonard Pommereau** M.S. cognitive science, 1st year, University of Bordeaux

Objective: establish a protocol that could be used to evaluate visual comfort during the viewing of stereoscopic images using electroencephalography. Duration: 2 months.

## teaching

M.S. 2nd year **Software engineering** University of Bordeaux

10 hours

M.S. 1st year **Human factors and human-computer interaction** University of Bordeaux

6.25 hours

M.S. 1st year **Software engineering** University of Bordeaux

77 hours

B.S. 3rd year **Network and object oriented programming** University of Bordeaux

64 hours

B.S. 1st year **Programming** University of Bordeaux

60 hours

B.S. 1st year **Unix and introduction to programming** University of Bordeaux

74.67 hours

B.S. 1st year **Office applications** University of Bordeaux

13.33 hours

## publications

### articles in peer-reviewed journals

Classifying EEG Signals during Stereoscopic Visualization to Estimate Visual Comfort

Jérémy Frey, Aurélien Appriou, Fabien Lotte, Martin Hachet

*Computational Intelligence and Neuroscience* (2016). 2016

EEG-based neuroergonomics for 3D user interfaces: opportunities and challenges

Jérémy Frey, Martin Hachet, Fabien Lotte

*Le travail humain* (2016). 2016

Émersions sensorielles

Jérémy Frey

*CORPS 13* (2015) pp. 113-121. 2015

### international peer-reviewed conferences/proceedings

Inner Garden: Connecting Inner States to a Mixed Reality Sandbox for Mindfulness

Joan Sol Roo, Renaud Gervais, Jérémy Frey, Martin Hachet

*CHI - ACM Conference on Human Factors in Computing Systems*, 2017

### **Tobe: Tangible Out-of-Body Experience**

Renaud Gervais, Jérémy Frey, Alexis Gay, Fabien Lotte, Martin Hachet  
*TEI - ACM Conference on Tangible, Embedded and Embodied Interaction, 2016*

### **Framework for electroencephalography-based evaluation of user experience**

Jérémy Frey, Maxime Daniel, Julien Castet, Martin Hachet, Fabien Lotte  
*CHI - ACM Conference on Human Factors in Computing Systems, 2016*

### **Remote Heart Rate Sensing and Projection to Renew Traditional Board Games and Foster Social Interactions**

Jérémy Frey  
*CHI EA - ACM Conference on Human Factors in Computing Systems Extended Abstracts, 2016*

### **Comparison of a consumer grade EEG amplifier with medical grade equipment in BCI applications**

Jérémy Frey  
*International BCI meeting, 2016*

### **Comparison of an open-hardware electroencephalography amplifier with medical grade device in brain-computer interface applications**

Jérémy Frey  
*PhyCS - International Conference on Physiological Computing Systems, 2016*

### **Recent advances in EEG-based neuroergonomics for Human-Computer Interaction**

Jérémy Frey, Martin Hachet, Fabien Lotte  
*Proceedings of the 1st International Neuroergonomics Conference, 2016*

### **Heart Rate Monitoring as an Easy Way to Increase Engagement in Human-Agent Interaction**

Jérémy Frey  
*PhyCS - International Conference on Physiological Computing Systems, 2015*

### **Continuous Mental Effort Evaluation during 3D Object Manipulation Tasks based on Brain and Physiological Signals**

Dennis Wobrock, Jérémy Frey, Delphine Graef, Jean-Baptiste Rivière, Julien Castet, Fabien Lotte  
*INTERACT '15, 2015*

### **Pointing in Spatial Augmented Reality from 2D Pointing Devices**

Renaud Gervais, Jérémy Frey, Martin Hachet  
*INTERACT '15, 2015*

### **Estimating Visual Comfort in Stereoscopic Displays Using Electroencephalography: A Proof-of-Concept**

Jérémy Frey, Aurélien Appriou, Fabien Lotte, Martin Hachet  
*INTERACT '15, 2015*

### **Review of the use of electroencephalography as an evaluation method for human-computer interaction**

Jérémy Frey, Christian Mühl, Fabien Lotte, Martin Hachet  
*PhyCS - International Conference on Physiological Computing Systems, 2014*

### **Teegi: Tangible EEG Interface**

Jérémy Frey, Renaud Gervais, Stéphanie Fleck, Fabien Lotte, Martin Hachet  
*UIST - ACM User Interface Software and Technology Symposium, 2014*

### **Assessing the zone of comfort in stereoscopic displays using EEG**

Jérémy Frey, Leonard Pommereau, Fabien Lotte, Martin Hachet  
*CHI EA - ACM Conference on Human Factors in Computing Systems Extended Abstracts, 2014*

## **miscellaneous**

### **When HCI Meets Neurotechnologies: What You Should Know about Brain-Computer Interfaces**

Jérémy Frey, Camille Jeunet, Jelena Mladenović, Fabien Lotte, Léa Pillette, Fabien Lotte  
*CHI EA - ACM Conference on Human Factors in Computing Systems Extended Abstracts, 2017*

### **Scientific Outreach with Teegi, a Tangible EEG Interface to Talk about Neurotechnologies**

Jérémy Frey, Renaud Gervais, Thibault Lainé, Maxime Duluc, Hugo Germain, Stéphanie Fleck, Fabien Lotte, Martin Hachet  
*CHI EA - ACM Conference on Human Factors in Computing Systems Extended Abstracts, 2017*

## VIF: Virtual Interactive Fiction (with a twist)

Jérémy Frey

*Pervasive Play, CHI '16 Workshop, 2016*

## Introspectibles: Tangible Interaction to Foster Introspection

Renaud Gervais, Joan Sol Roo, Jérémy Frey, Martin Hachet

*Computing and Mental Health, CHI '16 Workshop, 2016*

## book chapters

### Neurophysiological markers for passive BCIs

Raphaëlle N. Roy, Jérémy Frey

*Brain Computer Interfaces: Methods, Applications, Perspectives, Wiley-ISTE, 2016*

### Marqueurs neurophysiologiques pour les interfaces cerveau-ordinateur passives

Raphaëlle N. Roy, Jérémy Frey

*Les interfaces cerveau-ordinateur 1: Fondements et méthodes, Wiley-ISTE, 2016*

## thesis

### Leveraging human-computer interactions and social presence with physiological computing

Jérémy Frey

*PhD thesis, Univ. Bordeaux, 2015*

## scientific outreach

- |      |  |  |
|------|--|--|
| 2017 | <b>Inaugurating a living lab dedicated to education, demonstrating how Teegi could be used by teachers</b> | Canopé 57, Metz  |
| 2016 | <b>Invited talk “Physiological computing and spatial augmented reality: reflecting on inner state”</b>     | Paris Open Source Summit, Paris  |
| 2016 | <b>Demonstrating “Teegi” during the event “Fête de la science”</b>   | Cité des Sciences, Paris & Cap Sciences, Bordeaux  |
| 2016 | <b>Invited talk “Toward popular brain-computer interfaces”</b>   | Colloquium “What’s up in you mind?”, Paris   |
| 2016 | <b>Co-animating a workshop presenting OpenViBE software</b>  | 6 <sup>th</sup> BCI meeting, Pacific Grove, USA  |
| 2016 | <b>Participation to a film debate about HER</b>  | “Géocinema 2016” event, Bordeaux   |
| 2016 | <b>Demonstration of “Tobe”, a tangible out-of-body experience</b>  | “TEI '16 – Conference on Tangible Embedded and Embodied Interaction”, Eindhoven, The Netherlands |
| 2015 | <b>Demonstration of “Teegi” during “robot maker's day”</b>   | ENSEIRB-MATMECA graduate school, Bordeaux  |
| 2015 | <b>Demonstration of “Teegi”, a tangible interface for electroencephalographic signals' visualization</b>   | IIT Techfest festival, Mumbai, India   |
| 2014 | <b>Participation to the film debate “ExistenZ : faut-il avoir peur de la réalité virtuelle ?”</b>          | University of Bordeaux cultural service  |

- 2013 **Accompanying high-school students during a laboratory visit for “Fête de la science”** Bordeaux
- 2013 **Conference and panel “L'homme 'augmenté': notre avenir est-il 'cyborg' ?”**  
“Nancy Renaissance” event, Nancy
- 2013 **Conference “Demain les objets sont connectés ! – L'activité cérébrale pilote directement l'ordinateur : présentation de l'interface cerveau-ordinateur”**  
“Semaine Digitale” event, Bordeaux
- 2013 **Animating a workshop about brain-computer interfaces for high-school students** Bordeaux
- 2013 **Animating a stand presenting Inria research institute** “Aquitec” event, Bordeaux
- 2012 **Interview with high-school students about tactile interfaces** Bordeaux