

Céline COUTRIX

Born June 04, 1982. French.

Ph.D. in Computer science, Human Computer Interaction
CNRS Researcher

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Education

2007 - 2010

Research Student in Interactive Art

Installation & relational devices, Locative medias

Top French art school, École Nationale Supérieure des Arts Décoratifs, Paris, France

2005 - 2009

(Defended on May, 7th 2009)

Ph.D. in Computer Science (Human Computer Interaction)

“Mixed Reality Interfaces: Design and Prototyping”

Advisor Pr, Dr Laurence Nigay

University of Grenoble 1 (UJF)

Grenoble Informatics Laboratory (LIG)

EHCI research group, Grenoble, France

Founded by the French Government.

2004 - 2005

Research Master of Science in Informatics

University of Grenoble 1 (UJF)

Grenoble Informatics Laboratory (LIG)

EHCI research group, Grenoble, France

With highest honors

2002 - 2005

Engineering Master of Science in Informatics

Top French computer science engineering school ENSIMAG, Grenoble, France

With highest honors

2000 - 2002

Classes préparatoires (Very demanding 2 years undergraduate program to enter the French “Grandes écoles” of engineering; followed by a national competitive examination, and according to the rank, admittance to a top-level engineering school)

Ranked 391 of 3275 candidates following the written and oral exams

2000

A-levels, specialized in mathematics and art

With highest honors

Skills

With most efficiency and expertise first

Code

Languages

C/C++, Objective-C, Java, Ada, Javascript, SQL, Processing, C#

Software tools for Human-Computer Interaction

Qt, Phidgets, Multitouch.fi, ARToolKit, OpenGL, Swing, Isis, tcl/tk, Arduino

Software

XCode, Eclipse

Operating systems

MacOS, Unix/Linux (bash/tcsh), Windows

Documents & Presentations

Languages

Latex, HTML, CSS

Software

Microsoft Office/OpenOffice, Photoshop/Gimp

Experience

2010 Present

CNRS Researcher

Research on Interaction with Physical-Digital Objects
LIG Laboratory, EHCI research group, Grenoble, France

2010 Present

External Researcher

Research on Interactive Arts
Top French art school, École Nationale Supérieure des Arts Décoratifs, Paris, France

2009 2010

Post-Doctoral Researcher

Research on Ubiquitous Computing
Software development, in C# and C++, with the MultiTouch sdk (<http://multitouch.fi/>)
HIIT Laboratory, Ulx research group, Helsinki, Finland

2005 2009

Research associate

Research on mixed reality
Software development with Java & C++, with ARToolKit, Phidgets and Qt
LIG Laboratory, EHCI research group, Grenoble, France

2005 2008

Assistant Lecturer

Teaching Computer Science to specialists and non-specialists
University of Grenoble 2, Pierre Mendès-France, Grenoble, France

2004-2005

Research Intern

Research on Mixed Reality
Software development of an augmented reality multimodal and mobile game in Java with Swing and JOGL
LIG Laboratory, EHCI research group, Grenoble, France

July 2004 September 2004

Intern

Collaboration with artist Joëlle Bitton, on her « Passages » project
Software development of Passages with Isis and C
Media Lab Europe (European research partner of the MIT Media Lab),
Human Connectedness group, Dublin, Ireland

Research

CNRS researcher in Laboratoire d'Informatique de Grenoble (LIG), EHCI research group, Grenoble, France.

Ph.D. from University of Grenoble 1 (UJF), in the Grenoble Informatics Laboratory (LIG), Engineering of Human-Computer Interaction (EHCI) research group in Grenoble, with advisor Laurence Nigay (Pr., Dr.).

Practical Realizations

- 2010** **FizzyVis applied to JatsiTatsi**
Multitouch large wall meant to be installed at Pori Jazz Festival (Finland)
Collaboration
- 2009** **2011** **The Common Touch**
A touchable wall exploiting engagement and affective input of the audience.
Design, take part in software development.
Collaboration with artists and computer scientists.
- 2009** **Euclide**
Affective & collective multimodal interaction with a digital puppet in a science museum.
Took part in design and software development.
Collaboration with computer scientists.
- 2007** **present**
(in progress) **OP**
Software tool for rapid prototyping of mixed physical-digital objects, extending Qt (toolkit for Graphical User Interfaces).
Design and software development.
Used for the software development of ORBIS & Roam (below).
About 8000 lines of code
- 2008** **Roam**
Tool for taking picture without requiring attention.
Took part in design, software development.
Collaboration with a designer.
- 2007** **2008** **Snap2Play**
Mixed reality game on mobile phone.
Took part in design, supervising a master student for software development and evaluation.
Collaboration with information retrieval researchers.
- 2007** **ORBIS**
Mixed object for personal pictures.
Took part in design and software development.
Collaboration with a designer.
- 2005** **RAZZLE** (Augmented Reality puZZLE)
Augmented reality multimodal mobile game.
Took part in design, software development, and evaluation.
Collaboration with computer scientists and ergonomists.
About 5000 lines of code
- 2004** **Passages**
Public space installation that aims to connect intimately people in different cities.
Software development.
Collaboration with an artist in Media Lab Europe.

Statement

In the last decades, new interaction paradigms emerged. Among these, mixed reality defines an interaction paradigm that seeks to smoothly merge physical and digital worlds. The design of such mixed reality systems gives rise to further design challenges due to the new roles that physical objects can play in an interactive system.

The inherent problem of emerging interaction paradigms is that we develop ad-hoc systems without keeping track of the design process. Because of this lack of capitalization on our experience, we are forced to begin the next design from scratch, facing again similar design problems. We also face comprehension problems when explaining the choice of a design to other designers. In addition, we are not able to explore the design space in a systematic way, and always find a better solution after the development is finished. Even though several conceptual results exist for understanding and designing such systems, they do not address the entire design and remain local, and not related to each other. As a consequence, it is difficult to compare existing mixed reality systems and explore new designs.

Besides, conceptual tools need corresponding prototyping tools to facilitate development, in order to put them in use during design. Indeed, design takes advantages of this concrete generative approach through prototyping. Even though conceptual results and toolkits exist, they are not related to each other. As a consequence, it is hard to move smoothly back and forth between conceptual design and concrete prototyping activities when designing a new system.

Addressing these problems, my doctoral research aims at helping the design of mixed reality systems, by defining a uniform and unifying design framework. Through a conceptual interaction model, my goal is to have a global understanding of the design of mixed systems. This interaction model proposes a description for each design solution of mixed interactive systems, in order to keep track of the design and share it with pairs. It provides a framework and characteristics for exploring the design space and for comparing design solutions. My second goal is to make the conceptual tool useable during design, thanks to a development tool based on of my interaction model, capitalizing on existing toolkits. This toolkit has been already used to develop two systems. To sum up, my doctoral research addresses the two following research questions:

- a **unifying design model** that encompasses a wide range of previous results on the design of mixed reality systems,
- a **software tool for rapidly developing mixed objects** that is based on the underlying concepts of the model.

One of the key points of my doctoral research is to unify existing results both in terms of design and development. My goal is not to define yet another model or prototyping tool. Based on my doctoral research results, designers know how to use validated and consensual works in a systematic way during the design phase. Developers are able to develop prototypes based on the key concepts of my design framework while keeping the benefits of existing toolkits.

Publications (total 23)

International refereed journal articles (1)

Mobile phone-based mixed reality: the Snap2Play game

The Visual Computer, Springer Berlin / Heidelberg Publ., ISSN 0178-2789, Volume 25, Number 1, January 2009 (Print), ISSN 1432-2315, August 2008 (Online), pp. 25-37, 13 pages.

Chin, You, Coutrix, Lim, Chevallet, Nigay

Book Chapter (3)

De part et d'autre de l'interface : les continuités esthétiques et scientifiques

In SIMULATION TECHNOLOGIQUE ET MATÉRIALISATION ARTISTIQUE : Une exploration transdisciplinaire arts/sciences, Bianchini, S., Delprat, N.,

Jacquemin, C., Eds., Editions L'Harmattan, janvier 2012, ISBN 978 2 296 55938 7, 30 pages.

Coutrix, C., Cunin, D., Okura, M., Serrano, M.

An Integrating Framework for Mixed Systems

In *The Engineering of Mixed Reality*, Dubois, E., Gray, P., Nigay, L. (Eds.), Springer, ISBN: 978-1-84882-732-5, 2010, 22 pages.

Coutrix, Nigay

Systèmes interactifs mixtes : Fusion des mondes physique et numérique

In *Interfaces numériques (Collection information, hypermédiat et communication)*, Chapitre 3, Hermès Science, 15 juin 2007, ISBN13 978-2-7462-1695-2, 18 pages.

Nigay, Coutrix, Renevier

International refereed conference long papers (7)

Identifying Emotions Expressed by Mobile Users through 2D Surface and 3D Motion Gestures (**presentation*)

In Proceedings of the 14th ACM International Conference on Ubiquitous Computing (UbiComp'12), September 5-8, 2012, Pittsburgh, Pennsylvania, United States, 10 pages.

Coutrix, Mandran

Acceptance rate: 19.3%

OP: A Novel Programming Model for Integrated Design and Prototyping of Mixed Objects (**presentation*)

In Proceedings of the 13th IFIP TC13 Conference on Human-Computer Interaction (Interact'11), Part III, 5-9 September 2011, Lisbon, Portugal, Springer, LNCS 6948, pp. 54-72, 18 pages.

Coutrix, Nigay

Acceptance rate: 27.6%

FizzyVis: Designing for Playful Information Browsing on a Multitouch Public Display

In Proceedings of the th conference on Designing Pleasurable Products and Interfaces (DPPI'11), 22-25 June 2011, Milan, Italy, ACM, 8 pages.

Coutrix, Kuikkaniemi, Kurvinen, Jacucci, Avdouevski, Mäkelä

Supporting Multi-user Participation with Affective Multimodal Fusion

In Proceedings of the 9th International Conference on Creating, Connecting and Collaborating through Computing (C5'11), Kyoto, Japan, January 18-20 2011, IEEE, 8 pages.

Coutrix, Jacucci, Advouevski, Vervondel, Cavazza, Gilroy, Parisi

Engaging Spect-actors with Multimodal Digital Puppetry (**presentation*)

In Proceedings of the 6th Nordic Conference on Human-Computer Interaction (NordiCHI'10), Reykjavik, Iceland, October 16 - 20, 2010, ACM Press, 10 pages.

Coutrix, Jacucci, Spagnolli, Ma, Helin, Richard, Parisi, Roveda, Narula

Acceptance rate: 27.5%

Snap2Play: A Mixed-Reality Game based on Scene Identification

In Proceedings of the 14th International IEEE and ACM Multimedia Modeling Conference MMM 2008, Springer LNCS (Lecture Notes in Computer Science),

Advances in Multimedia Modeling, Volume 4903/2008, Kyoto, Japan, January 9-11 2008, pp. 220-229.

Chin, You, Coutrix, Lim, Chevallet, Nigay

Mixed Reality: A Model of Mixed Interaction (**presentation*)

In Proceedings of the 8th International Conference on Advanced Visual Interfaces (AVI'06), Venezia, Italy, 23-26 may 2006, ACM Press, pp. 43-50, 8 pages.

Coutrix, Nigay

Acceptance rate: 25%

International refereed conference short papers (3)

Interactivity of an Affective Puppet (**demonstration*)

Dans Adjunct Proceedings of the 11th International Conference on Ubiquitous Computing, UbiComp 2009, Orlando, Florida, September 30th - October 3rd 2009, ACM Press, 2 pages.

Coutrix, Narula, Helin, Jacucci, Roveda

Balancing Physical and Digital Properties in Mixed Objects (**poster*)

In Proceedings of the 9th International ACM Conference on Advanced Visual Interfaces, AVI 2008, Naples, Italy, May 28-30 2008, ACM Press, pp. 305-308, 4 pages.

Coutrix, Nigay

Deploying and Evaluating a Mixed Reality Mobile Treasure Hunt: Snap2Play

In Proceedings of the 10th International Conference on Human-Computer Interaction with Mobile Devices and Services, MobileHCI 2008, Amsterdam, the Netherlands, September 2-5 2008, ACM Press, pp. 335-338, 4 pages.

You, Chin, Lim, Chevallet, Coutrix, Nigay

French national refereed conference long papers (4)

Conception de systèmes interactifs mixtes : articulation d'une méthode informelle et d'un modèle d'interaction

In Actes de la 21ème conférence francophone sur l'Interaction Homme Machine, IHM 2009, Grenoble, France, 13-16 novembre 2009, ACM Press, pp. 293-302, 10 pages.

Bortolaso, Dubois, Bach, Nigay, Coutrix

Interagir avec un objet mixte : Propriétés physiques et numériques (**presentation*)

In Actes de la 19ème conférence francophone sur l'Interaction Homme Machine, IHM 2007, IRCAM, Paris, France, 13-15 novembre 2007, ACM Press, pp. 51-58, 8 pages.

Coutrix, Nigay

RAZZLE : de la conception à l'évaluation d'un système mobile et multimodal (**presentation*)

In Actes des Troisièmes Journées Francophones : Mobilité et Ubiquité 2006, UBIMOB 2006, Paris, France, 5-8 septembre 2006, ACM Press, pp. 1-8, 8 pages.

Coutrix, Nigay, Pasqualetti, Renevier

Modèle d'Interaction Mixte : la Réalité Mixte à la Lumière des Modalités d'Interaction (**presentation*)

In Actes des Deuxièmes Journées Francophones: Mobilité et Ubiquité 2005, UBIMOB 2005, Grenoble, France, 31 mai-3 juin 2005, ACM Press, pp. 153-160, 8

pages.
Coutrix, Nigay, Renevier

Other publications (5)

Pointing in the Physical World for Light Source Selection

Position paper for a workshop of the ACM conference on Designing Interactive Systems, DIS 2012, Newcastle, UK, June 11-15, 2012, 4 pages.
Delamare, Coutrix, Nigay

The Common Touch: Aesthetic and affective interaction in semi-public settings

Position paper for a workshop of the 8th International Conference on Pervasive Computing, Pervasive 2010, Helsinki, Finland, may 17-20, 2010, 2 pages.
Coutrix, Avdouevski, Jacucci

Mixed Reality Interfaces: Design and Prototyping (**presentation*)

Ph.D. thesis, Defended on May 7th, 2009, 394 pages
Coutrix

Helping the Design of Mixed Systems (**presentation*)

In Adjunct Proceedings (Doctoral Colloquium) of the 6th International Conference on Pervasive Computing, Pervasive 2008, Sydney, Australia, may 19-22 2008, Austrian Computer Society Publ., pp. 154-159, 6 pages.
Coutrix

Modèle d'Interaction pour les systèmes mixtes (**presentation*)

In Actes (Doctoral Consortium) de la 19^{ème} conférence francophone sur l'Interaction Homme Machine, IHM 2007, IRCAM, Paris, France, 13-15 novembre 2007, ACM Press, pp. 229-232, 4 pages.
Coutrix

Le Modèle d'Interaction Mixte : Un cadre pour la conception des systèmes mixtes (*poster*)

Rencontres des Jeunes Chercheurs en Interaction Homme-Machine, RJC-IHM 2006, Anglet, France, 12-15 novembre 2006, 4 pages.
Coutrix

European, National & Industrial Projects

2011 – 2013 (3 years)

Delight

French research project founded by FUI (Fond Unique Interministériel)
Design and prototyping of interaction techniques for novel LED lightning systems. Evaluation in hotels and workspaces.

2009 – 2011 (2 years)

S3 (Screen x Space x Social activity)

Finnish national research project founded by TEKES (National Technology Agency of Finland)
Build, test and evaluate prototypes that interlink physical and virtual spaces and foster engaging and fun social activity and rich interaction using large-scale digital displays in connection with physical spaces.

2007 – 2010 (3 years)

CALLAS (Conveying Affectiveness in Leading-Edge Living Adaptive Systems)

European project
Design and development of a Framework based on a plug-in multimodal

architecture, invariant to configuration of Multimodal Components, to interpret and process emotional aspects in real-time for easy and fast development of applications for Art and Entertainment.

Project Manager from October 1st, 2009

2007 - 2009 (3 years)

CARE (Cultural Experience: Augmented Reality and Emotion)

French research project founded by ANR (french National Agency for Research)

Definition of new interfaces for interaction based on emotions and augmented reality.

Definition of a design and evaluation method of the experience of the user in a cultural context through emotions and augmented reality.

2008 (1 year)

Simulation and Materialization

French research project founded by CNRS (French National Centre for Scientific Research)

Collaboration between art & science laboratories around the simulation and materialization theme.

2006 - 2008 (2 years)

MoSAIC (Mobile Search and Annotation using Images in Context)

Founded by ICT-Asia, a programme of the French Cooperation to foster cooperation and networking in research and training in ICT in Asia.

Development of a novel contextual information access framework and robust visual indexing and matching algorithms for mobile media search applications.

2006 - 2009 (33 months)

OpenInterface

European project

Design and development of a platform for rapid prototyping of multimodal interactive systems as a central tool for user centred iterative design.

2005 - 2006 (10 months)

RA-Mobile

Industrial project with France Telecom R&D

Mobile Augmented Reality.

Talks

- I delivered a presentation for the 6 publications marked with (*).
- Presentation at the meeting of the French working group on mobility (GTMOB) at INREST, Lille, France, 2005.
- Presentation at the Multitouch interfaces workshop in HIIT on November 26th 2009.
- Presentation for the Augmented Human group at ISCC, Paris, France.
- Presentation at the Summer School on Ambient Intelligence organized by CNRS GDR I3, Lille, France, 2011.

Involvement in Scientific Community

- Member of AFIHM (French association for Human-Computer Interaction) and ACM.
- Reviewer for ACM AVI 2008, ACM EICS 2010, ACM Multimedia 2010, ACM ITS 2010, 2011 and UbiComp 2010 (adjunct), ACM CHI 2011, IFIP Interact 2011 conferences, The Engineering of Mixed Reality Book and the Technique et Science Informatiques journal.
- Took part in the french Human-Computer Interaction students meeting in November 2006 (RJC-IHM'06).

Responsibilities

- Took part in organizing the French National HCI Conference IHM 2009.

- Member of the 2007/2008 editorial board of « Visions Croisées », multidisciplinary general-public magazine focusing on research in Grenoble Universities.
- Member of Narkolepsy in 2009, a Grenoble-based association: organization of PLAY IN, first edition of a pluridisciplinary game-related event during which spectators are encouraged to perform (re)creative disobedience, technological reinvention of everyday life, and reappropriate freely the urban environment (<http://www.narkolepsy.com/>).
- Manage hardware (expect mobiles and cameras) and lab/demo room in post-doc research group (UIx) and organize group meeting at IHM research group

Art

Student in the research, creation and innovation program at Ecole Nationale Supérieure des Arts Décoratifs in Paris, in the “Installation and Relational Devices” and “Locative Medias” programs.

Statement

My artistic research aims at exploring ordinary social interactions and our relationships with others whether related or strangers. I am interested in artistic devices that bring communication, thinking, and questioning into our relationship with other people. I work on testing interactions that reveal and question the dynamic of our social behaviour.

I am also interested in the consequences of mobility on the temporality and spatiality of our relationships, as well as the influence of the environment and context on these relationships. Usage of mobile technologies is in a permanent “here and now” mode, that changes our relations. We can communicate almost anywhere anytime, with a distant person and in a different environment. In this realm, my work aims at exploring mobile technologies and their interaction with the private/public, with social and affective behaviours, and with relationship to the familiar/stranger.

Even if the French educational and research programs are not multidisciplinary, I work on linking my research in human computer interaction and in art, in order to always view human computer interaction from an unorthodox viewpoint – from the way we build interfaces to the modalities we use to interact.

Realizations

- | | |
|------------------------------|---|
| 2010
(in progress) | The Common Touch
Touchable wall exploiting engagement and affective input of the audience. |
| 2009
(in progress) | Hide and Seek
Ambiguous hide & show game on iPhone or iPod touch. |
| 2008 | Waiting Room
Pouch for mobile phones preserving imaginary waiting & excitement. |
| 2007 | Playground
Installation conveying social dimension of game and frustration similar to a stage.
http://iihm.imag.fr/coutrix/art/playground/playground.html |

Exhibitions

- | | |
|--|--|
| March 26, 2010 | Hide and Seek was exhibited during Pixelache festival in the Kerava Art Museum, in Helsinki, Finland |
| February 23, 2007 March 24, 2007 | Playground was exhibited in the Galerie Du Bellay, in Mont-Saint-Aignan, France |

Teaching

Assistant Lecturer at Aalto University, Department of Design, Helsinki, Finland (one invited course)
Assistant Lecturer at University of Grenoble 2, Pierre Mendès France Grenoble (16 ½ days of training, 64h/year of teaching)

2011

Human-Computer Interfaces
Computer science students
16h30 (course) + 19h30 (project)

2010

Prototyping Tangible Interfaces
Interaction design students
1h
Designed the course

2007 - 2008

C language
1st year informatics students
32h
Designed the exam

Web Sites Design
Master students in economics
24h
Designed entire course and evaluation

2006 2007

Supervision of a last year E.N.S.I.M.A.G. project (Masters of engineering) on a mixed reality game on mobile phone, jointly with I2R in Singapore.

Supervision of a bachelor student internship on a mixed reality mobile game.

Databases and ACCESS
Bachelor students in economics
20h
Designed the exam

Internet & eMails, and advanced office with Word, PowerPoint, & OpenOffice
2nd year economics students
48h
Designed part of the course

2005 - 2006

Office with Word, Excel
1st year economics students
74h

Languages

French (native)

English (advanced)

Spanish (intermediate)

German (formerly fluent, to be re-activated)

Finnish (beginner)

Others & Personal Interests

Driver's licence bearer

Personal Interests in Contemporary art, Design, Sewing and knitting, Classical guitar playing since I was 6 years old, Sport, and Travel.