

**UT Austin | Portugal Digital Media
Doctoral Symposium**

December 3, 2011

UT Austin College of Communication

UT Austin | Portugal

INTERNATIONAL COLLABORATORY FOR EMERGING TECHNOLOGIES, CoLAB

UT Austin-Portugal Digital Media Doctoral Symposium Program

December 3, 2011

Lady Bird Johnson Room, Communication Center Building A (CMA 5.160)

10am

Welcome from Directors Sharon Strover and Carlos Guedes

10:15am

Marta Ferraz

A Cyborg Approach to Development: Bio Post-human Interactive Sustainable Technologies for Children's Development

10:30am

Carlos Figueiredo

Social Ties and Homophily in the Arousal of Surprise in Social Networks

10:45am

Tiago Videira

Instrumental Fado: A Generative Interactive System

11:00am

Isabel Paiva

Extended Skin: Designing Interactive Content for Ubiquitous Computing Materials

11:15am

Short break

11:25am

Rossana Santos

vuSpot: An Infrastructure for Augmented Information Sharing Using Video Cameras

11:40am

Alcimar Quieroz, PhD

Measuring the Information Society Among Developing Countries: Mercosur Case

12:00pm

S. Craig Watkins, PhD

Studying the Digital Future

12:20pm

Lunch break

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1:00pm

Afonso O'Neill

Mapping [Geo]Cognition: Tracing the [Public] Mental Image of the City

1:15pm

João Filipe Beira

Mediated Digital Liveness

1:30pm

Luís Frias

Emotional Biofeedback Storytelling: A framework for analyses of Hyper-film Narrative using psycho physiological data

1:45pm

Intern presentations: Rui Silva and Diana Castilho

2:00pm

Carlos Guedes, PhD and Bruce Pennycook, DMA

Kinetic Controller Driven Music Systems (UT Austin-Portugal sponsored project)

2:10pm

Luis Francisco-Revilla, PhD and Sharon Stover, PhD

ImTV: On-Demand Immersive-TV for Communities of Media Producers and Consumers (UT Austin-Portugal sponsored project)

2:20pm

Joseph Straubhaar, PhD

Digital Inclusion and Participation: Digital Divide Studies in Austin and Portugal (UT Austin-Portugal sponsored project)

**FROM THE BACKYARD TO
20 LIGHT-YEARS FROM EARTH:
GLIESE 581D!!!**

A CYBORG APPROACH TO DEVELOPMENT
Bio Post-human Interactive Sustainable
Technologies for Children's Development

Child-Machine Computer Interaction

Keywords: Human Development, Cybernetics,

Embodied technologies, Physical interaction,
Mixed environments.

01. Why for Embodied interactive technologies?

-Computer systems commonly exploit only a tiny potential of the human sensory/ motor systems capabilities (Buxton, 1986). "Keyboard and mouse" are based on MANIPULATIVE action's interaction (prehesion motor actions). EMBODIED full body motor actions can be explored through the use of new forms of interaction interfaces (Dourish, 2001).

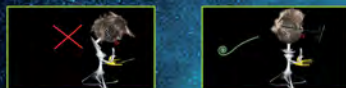
Embodiment experiences, as learning experiences, have a positive contribution to children's development and needs. (Neto, 2003; Jensen, 2002; Pellegrini & Smith, 1998; Luria & Vygotsky, 1996; Piaget, 1954).

02. RELATED WORK / PROBLEM

-HCI (HUMAN COMPUTER INTERACTION) LEARNING/LEISURE EXPERIENCES --> VIRTUAL SCENARIOS--> CHILDREN IMMersed AWAY FROM THE SURROUNDING PHYSICAL REALITY (E.G. "Wii" NINTENDO, "MOVE" - SONY, "DANCE, DANCE REVOLUTION - KONAMI, "XBOX KINECT" -MICROSOFT).

Located base mobile/ Hand-held (TUIs) -PDAs and mobile phones (e.g. "Ambient wood", "New Sense of Place"; Fitzpatrick et al., 2004; Fleurlor et al., 2005)

Children's attention is focus on the device and not on the physical surrounding environment/persons



"...nature has an enormous capacity to calm the most anxious child, pacify anger and aggression, treat depression, reduce obesity, improve attention and learning, and optimize child development"

Last Child in the Woods, Richard Louv, 2005.

The amount of "green space" that a child is exposed to that determines the extent their attention is restored (Kuo, 2007).

Human body was not biologically designed to be sedentary.

TESTING A CYBORG APPROACH TO DEVELOPMENT

Problem

- How do we relate "body", "machine" and "environment" in the human development?

- How do the embodied actions affects learning skills in the earlier stages of development?
- Physiology (neurology - brain electrical activity - cognitive associations/memory + physical metabolism - galvanic skin response, METs, Heart rate)
- Motor Peromances (Fine and Global motor actions; motor variability)

What its the relation between the human organism and the machine in an evolutionary perspective?



JACK THOMPSON - THE FIRTS BIO EXTENDED CYBORG KID WAS BORN IN NOVEMBER 09, 2011.



e.g. VARIABLES ANALYSIS (quantitative and qualitative measures)

...CONTINUING TESTING A CYBORG APPROACH TO DEVELOPMENT

- Spatial corporality - construction of the Perceptual world; ambient optic array -changes come from locomotion, and the non-changes come from rigid layout of environmental surfaces: "affordances"; (Gibson, 1977; Norman, 1988).

What's the relation between perceptions in these environments?

THREE SENSORY SYSTEMS

Sensory input to Vestibular, Tactile and Proprioceptive (movement and touch) channels (Braswell, 2006; Pelligrini, 2005; Gallahue, 1982; Montagu, 1972).

WE PROPOSE:

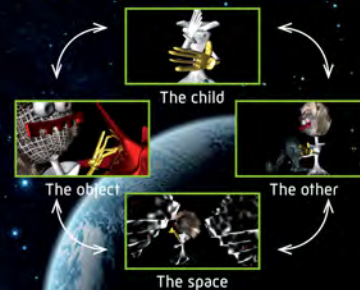
- Stage 1 - VESTIBULAR/TACTILE/PROPRIOCEPTION
- +
- Stage 2 - VISUAL/AUDITORY/SMELL/TASTE
- +
- Stage 3 - MACHINE + ENVIRONMENT

= DEVELOPMENT = (X) ????

How do the sensory, motor and physiological channels combined with virtual channels and the environment affect the earlier human organisms?

If organisms differ with respect to their bodies mixed with artificial components, do they differ as well in how they perceive the world? What consequences will it bring for the mixed organism?

Stimuli <--> multiple biological states - flow <--> virtual and real scenarios



CYBORG CHILDREN MARK THE BEGGINING OF THE RUDIMENTAR AND SPECIALIZED SENSATIONS/ PERCEPTIONS IN AN ELECTRONIC COLABORATIVE BIO CONTEXTUALIZED EVOLUTIONARY EXPERIENCE.

MARTA FERRAZ



PhD Student: Carlos Figueiredo (carlos.fig7@gmail.com)

Supervisor: José Azevedo [FLUP]

Co-Supervisors: Eduarda M. Rodrigues [FEUP] | Luis Revilla [UT \iSchool]

Accessing and sharing web information is a process that enhances the possibilities of sharing with others and thus creating new forms of sociality and of construction of meaning [1]. That, in turn, magnifies the role and impact of emotions [2; 3; 4] within these processes both for the way that construction is created and for the manner in which we analyse it. In particular, we need to rearticulate the connections between social ties [5] in network environments [6; 7; 8] and emotions, namely among people cognitively similar [9; 10].

Problem: How to improve the construction of meaning by stimulating the creation of implicit information?

Research gap: How to stimulate the creation of implicit information using social networks environments?

Research questions:

1. How does homophily and surprise intervene in the process of information sharing, attending to the social ties between the source and the receiver of information?
2. How to describe the structural properties of a social network according to the triadic relationship between homophily, social ties and arousal of emotions?

Goal:

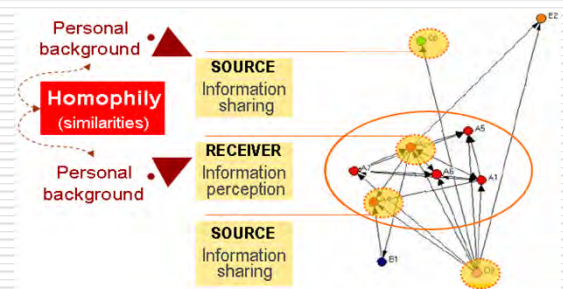
Our aim is identify how the cognitive stimulation – through the analysis of emotional stimulus, such as surprise – impacts on the creation of implicit information among users that share information within an online network. To elaborate this, we will focus on three more distinct topics: homophily, social ties and emotions (mainly the emotion of surprise).

Methods:

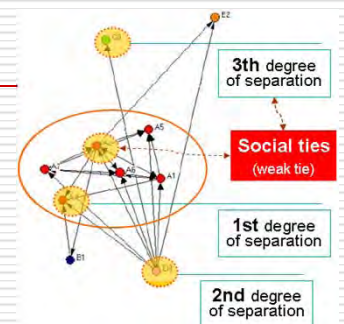
Our study empirically analyses and compares several data considering two main operational areas of study: 1) The relationship between emotions and information sharing and the correspondent cognitive stimulus; 2) Social network structure and the analysis of patterns within the triadic relationship between homophily, social ties and emotions.

2011 December 03

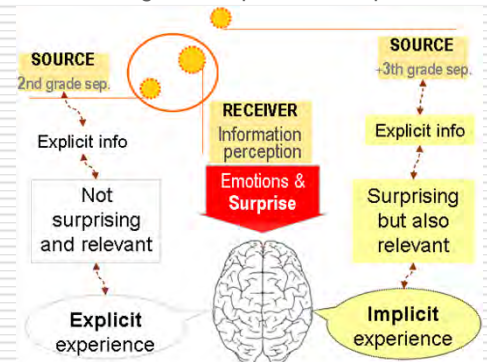
Homophily → Source & Receiver



Social ties → Source & Receiver



Info sharing → Surprise → Implicit info



References:

[1] Figueiredo, C. 2011 'The disruption of the Web by the new cognitive paradigm', McLuhan Galaxy Conference: Understanding Media Today, Barcelona May, 23nd-25th, Collection Sehen, Editorial Universidad Oberta de Catalunya, Barcelona, Spain.

[2] Izard, CE 1991 *The Psychology of Emotions*, New York: Plenum Press.

[3] Derbaix, C 2003 'Inducing word-of-mouth by eliciting surprise – a pilot investigation', *Journal of Economic Psychology*, Volume: 24, Issue: 1, Pages: 99-116.

[4] Frijda, NH 03 'Emotion experience', *Cognition and Emotion*, 0(0), CEM 1450.

[5] Granovetter, MS 1973, 'The strength of weak ties', *American Journal of Sociology*, vol. 78, N° 6, pp. 1360 - 1380.

[6] Watts, D 2003, *Six Degrees - The Science of a Connected Age*, WW Norton & Company, New York.

[7] Barabási, AL 2003 *Linked: how everything is connected to everything else and what it means for business, Science, and everyday life* Cambridge, MA: A Plume Book, 978-0-452-28439-5.

[8] Leskovec, J & Backstrom, L & Kumar, R & Tomkins, A 2008 'Microscopic evolution of social networks', *KDD'08*, August 24–27, 2008, Las Vegas, Nevada, USA. ACM 978-1-60558-193-4/08/08.

[9] Rogers, EM & Bhowmic, DK 1970 'Homophily-Heterophily: relational concepts for communication research', *Oxford Journals, Social Sciences, Public Opinion, Quarterly*, Vol. 34, Issue 4, Pp. 523-538.

[10] McPherson, M & Smith-Lovin, L & Cook, JM 2001 'Birds of a feather: Homophily in social networks'. *Annual Review of Sociology*, 27(1):415–444, 2001.

Instrumental Fado : A Generative Interactive System

Tiago Videira
Digital Media PhD Student – FCSH/UNL – UT Austin Portugal

Fado in Literature

The history of Fado as seen through literature. How the practice evolved in society, analysis of definitions, schemes, histories, and musical transcriptions.

«A section of eight 2/4 measures, divided in two equal and symmetric parts, with two melodic contours each; preferably in the minor mode, although many times it goes into the major with the same melody or another; harmony built on an arpeggio in sixteenth-notes using only tonic and dominant chords, alternating within two measures.»

(Ernesto Vieira, 1904)



«Fado is a way to launch your voice.»
(António Victorino d'Almeida, 2010)

General Reference:

Nery, Rui Vieira. 2004. *Para uma história do Fado*. Público.

Musical Informatics

Studying the history and evolution of Musical Informatics. Finding suitable models for future implementation.

Analyses of several rule-based versus Intelligent systems in style imitation:

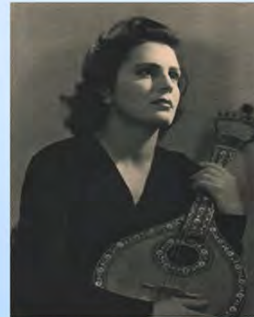
Markov models, Grammars, Chaos and Fractals, Cellular automata, Evolutionary Systems, Artificial Neural Networks...



David Cope's successful *Experiments in Musical Intelligence* and *Emily Howell* programs as a source of reference and inspiration.

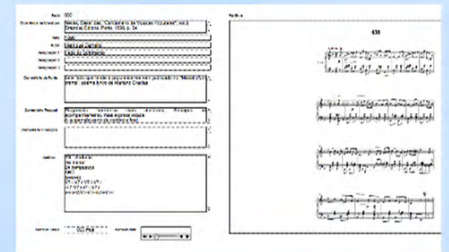
General reference:

Nierhaus, Gerhard. 2008. *Algorithmic composition*. Springer



Systematization

A database is being built using the occurrences of musical transcriptions classified as Fado in literature.



The database contains references, comments, structural and formal analyses, musical scores and MIDI files of each Fado.

Pattern analysis and statistic evaluation is being made to capture essential signatures and characteristics.

General Reference:

Margulis, E.H. «A model of melodic expectation». *Music Perception* 22, n. 4 (2005): 663–714.

Interactive Music and Digital controllers

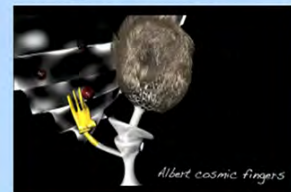
Sonata for unprepared player



An interactive work for 2 wii notes presented in Artech 2010.

Videira, Tiago. 2010. Sonata for Unprepared player. in *Proceedings of the 5th International Conference on Digital Arts*, 165-167. Guimarães.

Alberto Cosmic Fingers



A digital instrument based on a glove with sensors.

<http://atomicdesigners.yolasite.com/experiments.php>

Abstract

Fado is commonly thought as being a traditional Portuguese musical genre that evolved and became the most important style of music in Portugal, regularly identified with the people and culture of the nation itself. Its study, performance and preservation is of great relevance in the present time. Currently, Fado is claiming its place in the world applying for the classification of immaterial humanity patrimony by UNESCO.

Our goal is to understand what Fado is and to create an automatic system that successfully generates new instrumental music based on it. The generative process also aims to be interactive, i.e. responsive to user constraints, considering musical and aesthetical parameters, such as tempo, rhythm, or general mood of the Fado.

Isabel Paiva
PhD Student in Digital Media
Non Degree Seeking Student at UT Austin

Supervisor
Prof. Dr. António Câmara
New University of Lisbon

extended skin: designing interactive content for ubiquitous computing materials

Using skin as a metaphor this research aim is to identify, apply and test ubiquitous computing concepts, experimenting with both digital media and smart materials ^{1,2,3}

The research method is based in practice as research ^{4,5,6}, which frames relations between different knowledge categories - such as design, engineering and their models - and also recognises design studio experimentation as production of knowledge.

Building from this design tradition and with a collaboration approach, the synthesis aims to be (a) prototype(s) which would bring smart materials to public sphere, i.e., emphasizing its communication, aesthetic and symbolic qualities when applied to artifacts.

- 1 ASHBY, M, FERREIRA, P., SCHODEK, D. (2009) *Nanomaterials, nanotechnologies and Design*, Elsevier
- 2 ADDINGTON, M. & SHODECK, D. (2005) *Smart Materials and Technologies for architecture and design professions*, Elsevier
- 3 ASHBY, M. & JOHNSON, K. (2010) *Materials and Design . The art of material Selection in Product Design*, Elsevier
- 4 FALLMAN, D. (2008). "The Interaction Design Research Triangle of Design Practice, Design Studies, and Design Exploration." *Design Issues* Summer 2008, Vol. 24, No. 3: 4-18.
- 5 BARRET, E., BOLT B. (2007) *Practice as research Approaches to creative arts enquiry*, I. B. Tauris
- 6 FUAD-LUKE, A. (2009) *Design Activism Beautiful Strangeness for a Sustainable World*, Routledge

CitySkin

professor Peter Hall and Dan Olsen (UT Austin)
professor Nuno Correia (N. U. Lisbon)



CitySkin uses mobile phones as a tool to retrieve data. This allows to draw a new layer of a city map giving visibility to relations between time and space, but also to subjectivity on its perception.

Sensitive Tile

with Lindsey Culpepper

professor Dan Olsen
(UT Austin - Department of Art and Art)

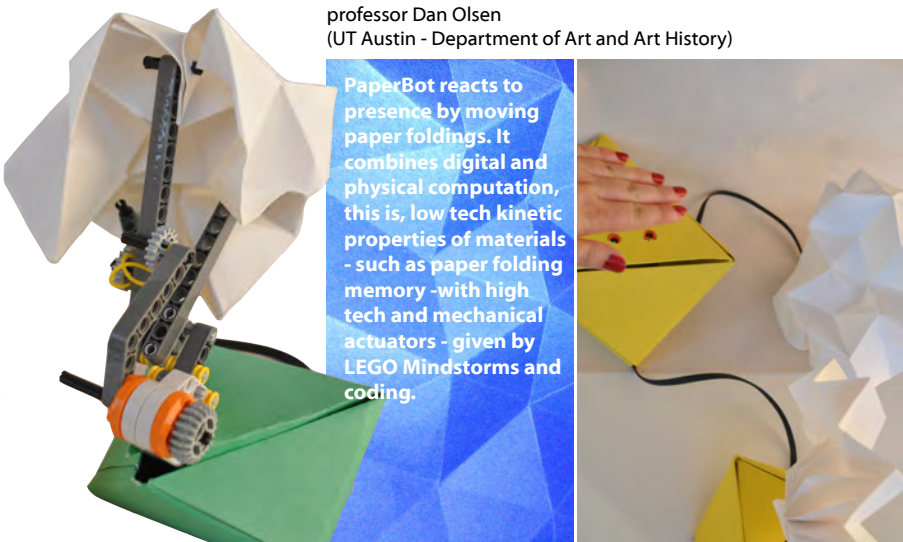


Sensitive tile is a low tech sensing artifact that uses smart inks. It combines thermochromic and hydrochromic inks - which respond respectively to water and temperature variations - giving visual feedback. This information aims to contribute to environmental awareness in urban contexts.

PaperBots

professor Dan Olsen
(UT Austin - Department of Art and Art History)

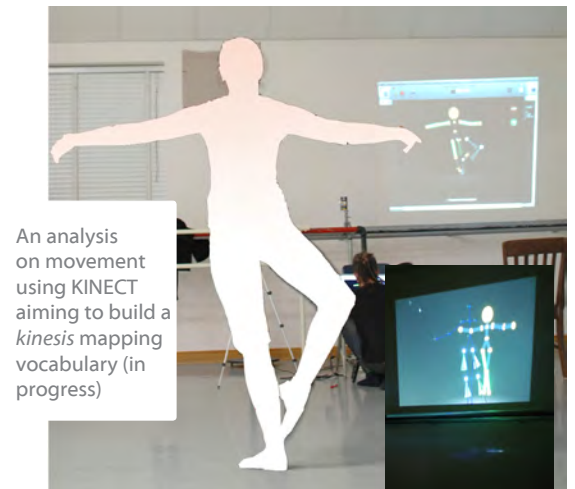
PaperBot reacts to presence by moving paper foldings. It combines digital and physical computation, this is, low tech kinetic properties of materials - such as paper folding memory - with high tech and mechanical actuators - given by LEGO Mindstorms and coding.



SuperMirror

with João Beira, Zoe Marquard, Natalia Em

professor Francisco Revilla (UT Austin - School of Information) and Department of Theatre and Dance



An analysis on movement using KINECT aiming to build a kinesis mapping vocabulary (in progress)

vuSpot: an infrastructure for augmented information sharing using video cameras

Video camera networks are often found and are mainly used as a repository of video and for surveillance purposes

The use of Wireless Networks allows sharing information between users using mobile devices

Video streams from cameras can be augmented and used to recognize actions, location and movement of users.



Video camera networks, wireless networks, the computational support of the devices connected to these networks and the use of mobile devices provide means for on- and off- site visits to spaces.

Personalized guided tours.
Augmented Reality games.
Remote visiting using Telepresence.

Aimed Contributions

Goal: Design and develop an infrastructure, adaptable to a space, that uses existing video cameras networks to provide means for augmenting spaces and supporting interactive experiences.

- Introduce a collaborative environment that allows new forms of user interaction.
- Propose an infrastructure to support telepresence.
- Explore the use of Augmented Reality in mobile devices to adapt video information to provide better user experiences.
- Research system and network requirements to perform streaming of the augmented video in mobile devices.

vuSpot aims to explore and develop alternative solutions applying Augmented Reality to the information captured by distributed video systems.

Augmented Reality allows the creation of virtual objects and characters providing additional information and means to create a virtual environment that meets the user interests and encourages exploring a space.

Interaction between users and the space can be accomplished by sharing information between mobile devices and the system.

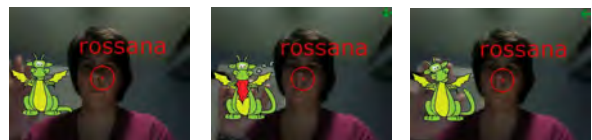
Remote visits to the space can be held by accessing its augmented real-time video and interacting with it and the local visitors.

By allowing interaction between visitors (present at the space or remotely) an environment is created to facilitate the creation of social networks, telepresence applications and could lead to a more interesting space exploration through guided tours, games, and shared information exploration.

"A Guardian Dragon is a playful and curious dragon that likes to observe humans and enjoys their company. They are faithful protectors and have powers that grow as they interact with humans. They are invisible and quiet, except for some moments in which they can be very exuberant making noises and becoming visible to some people. They have a good sense of humor and love pranks."



UBI, the Guardian Dragon



Interaction with virtual characters. In this case, with UBI, Rossana's guardian dragon. Depending on the movement performed on UBI, he reacts differently.

Rossana Santos rossana.santos@videocitta.com.pt
Escola Superior de Tecnologia de Setúbal, Instituto Politécnico de Setúbal
Interactive Multimedia Group, CITI/DI/FCT, Universidade Nova de Lisboa

Supervisor: Nuno Correia nmc@di.fct.unl.pt
Interactive Multimedia Group, CITI/DI/FCT, Universidade Nova de Lisboa

Acknowledgments:

This work is partly funded by the Fundação para a Ciência e a Tecnologia, Ministério da Educação e da Ciência, Portugal, grant SFRH/BD/46980/2008 of the UT Austin | Portugal Program and by the Center for Informatics and Information Technology (CITI), Departamento de Informática (DI), Faculdade de Ciências e Tecnologia (FCT), Universidade Nova de Lisboa.

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IPS Instituto Politécnico de Setúbal
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FACULDADE DE CIÊNCIAS E TECNOLOGIA
UNIVERSIDADE NOVA DE LISBOA



<http://img.di.fct.unl.pt>

Introduction

As a concept, the information society was created in 1963 in Japan. Tadao Umesao used this phrase to describe a new model of society centered on the ability some countries show in generating economic development and social relations based in, *inter alia*, manipulating, storing, and processing information technology. The concept was transported to the West only in 1978, after a report by the French sociologists NORA & MINC. This is considered the cornerstone of the information society.

Since its beginnings, the information society is more than technological advances in information or communication technology. This concept must be understood as a political decision, based in economic planning with both: (a) the strategic and critical changes of the globalized international trade and its inherent industrial development process, but also: (b) an attempt to defend national development and corporations' profits against the growing and cyclical crisis of international capitalism.

Object

Because of globalization and the information society, however, humanity no longer shares only peace, security, and economic prosperity. Also globalized are many major diseases (such as AIDS and new types of influenza), uncontrolled migration (more alike to "mass fugues"), unfair international trade, constant violations of human rights, hate crimes, crimes against humanity, environmental pollution, and much more. *In nuce*, in an information society as it is built today, all these problems and dilemmas will be oversized and easily spread in a large-scale network. Thus, we recall the Information Society Declaration of Principles, Article 2:

"Our challenge is to harness the potential of information and communication technology to promote the development goals of the Millennium Declaration, namely the eradication of extreme poverty and hunger; achievement of universal primary education; promotion of gender equality and empowerment of women; reduction of child mortality; improvement of maternal health; to combat HIV/AIDS, malaria and other diseases; ensuring environmental sustainability; and development of global partnerships for development for the attainment of a more peaceful, just and prosperous world. We also reiterate our commitment to the achievement of sustainable development and agreed development goals", (UN, 2003).

Therefore, we analyze the role of information and communication technology (ICT) related to human rights and democracy, given the communication systems' ideological function in society. Among the broad range of individual constitutional rights, the rights associated with communication such as freedom of speech or the right to information are the primary tools of Western democracies

Goal

Vital for the formulation and structuring of domestic and international political relations in any country, ICT is not available for everybody. Our studies analyze how the rights to access technological progress and information are effectively distributed **within** and **among** developing countries. Our first case study is Brazil and Mercosur.

Methodology

With Amartya Sen and Mahbub ul Haq (UNDP, 1990), we believe that "the goals of development are choices and freedoms". We must put "people back at the center of the development process in terms of economic debate, policy and advocacy" (idem), considering that development measured by GDP per capita — the classic measure of development used in the international economy for national wealth comparability — does not measure effectively most nuances of poverty among social groups, and it is therefore limited. To address this limitation, researchers for United Nations Development Program created the Human Development Index in 1990. We follow their model, creating an index to measure ICT poverty taking into consideration technological, infrastructural, and educational indicators.

Formule 1 — Information Society Readiness Index

$$ISRI = \sum_{i=1}^n k_i I_i$$

k_i = constant, value 1/3;

I_i = Sub-indices (EDUC, TEC, INFRA);

ISRI = Information Society Readiness Index;

$i = 1, 2, 3, \dots, n$ (number of given territorial unities).

Formule 2 — Sub-index of Education

$$EDUC = ESC + 2 \times AEST + 2 \times ALFAB + PROF$$

EDUC = Sub-index of Education;

ESC = Schooling Indicator;

AEST = Year of study Indicator;

ALFAB = Literacy Indicator;

PROF = Graduated Teachers Indicator.

Formule 3 — Sub-index of Technology

$$TEC = ARAD + ATV + 2 \times MICRO + 2 \times INTER$$

TEC = Sub-index of Technology

ARAD = Radio set Indicator (householding);

ATV = TV set Indicator (householding);

MICRO = Computer Indicator (householding);

INTER = Internet Indicator (householding);

Formule 4 — Sub-index of Infrastructure

$$INFRA = ESCINT + EQUIP + ELETR + 2 \times TELEF$$

INFRA = Sub-index of Infrastructure;

ESCINT = University/College with Internet Indicator (per 1,000 inhabitants);

EQUIP = Municipal Information Aparatus Indicator;

ELETR = Electricity Indicator (householdings);

TELEF = Telephone Indicator (householdings);

Formule 5 — Sub-index of Aparatus

$$EQUIP = \frac{2 \times BIBLIO + PROV + ESTRAD + ESTIV}{6}$$

BIBLIO = dummy for Library;

ESTRAD = dummy for Radio Station;

ESTIV = dummy for TV Station;

PROV = dummy for Internet Provider.

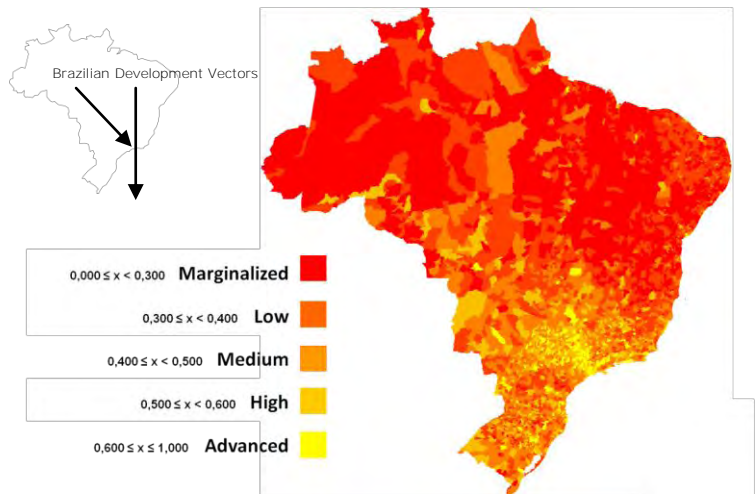
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- CASTELLS, Manuel. Rise of The Network Society (Information Age Series). New Jersey, Wiley, 1996, 1996.
 NORA, Simon. MINC, Alain. L'Informatisation de la Société. Paris, La Documentation Française, 1978.
 UN. Information Society Declaration of Principles. Geneva, UN, 2003.
 UNDP. Human Development Report: Concept and Measurement of Human Development. New York, UNDP, 1990.

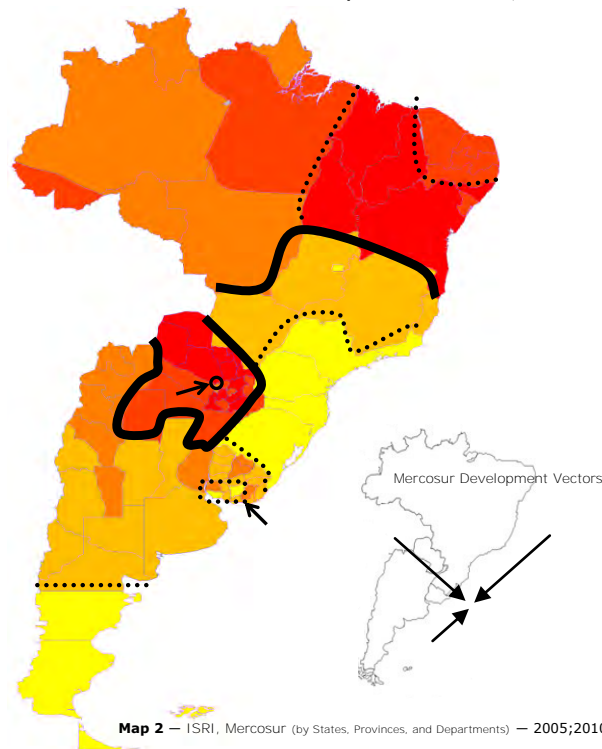
Results

First results on the Brazilian Information Society: ISRI shows Center-South and Littoral as opposed to North-Northeast and hinterland in terms of technological development. Concerning the Information Society, the **development vector** among 5,546 Municipalities in Brazil follows historical and economical development, i.e., social exclusion in many levels.

The Information Society should be measured within countries in order to detect social changes, and in Brazil's case, ICT maintains and even supports wealth and the distribution of goods and services that have been around since Brazilian Empire. We hypothesize that the same patterns happen in the other Mercosur countries. Probably the same hypothesis could be applied to Latin America.



Map 1 — ISRI, Brazil (Municipalities) — 2010.



Map 2 — ISRI, Mercosur (by States, Provinces, and Departments) — 2005;2010.

Conclusions

Nevertheless, the ISRI usage is merely indicative. ISRI might show cartographically many regions that seem to be ready to participate in the information society — as presented by the UN (2003) — and can highlight areas which require administrative action and specific public policies in order to facilitate their entry into the information society, assuming that is desirable for such regions. ISRI can also show the way the information society has developed in a given region.

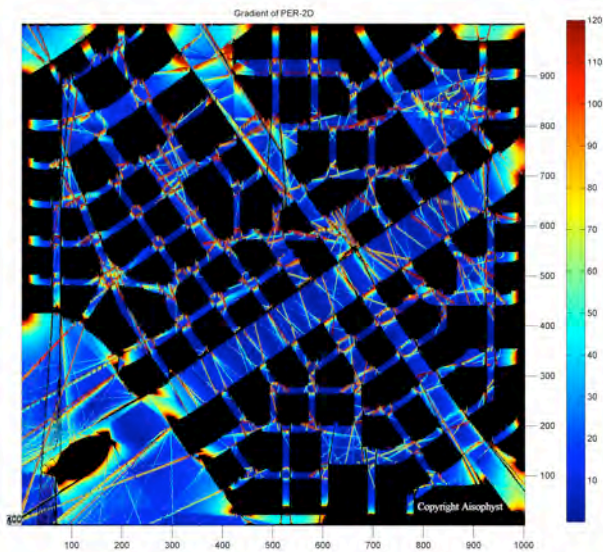
Concerning the Mercosur, statistical analysis highlighted that the degree of technical development achieved by the Uruguayan people, compared to the degree of underdevelopment experienced by the Paraguayan people, is a classical result of social exclusion. After applying our methodology on Paraguayan and Uruguayan statistical data, we consider that the concept of "digital divide" should be revisited and perfected.

MAPPING [GEO]COGNITION

tracing the [public] mental image of the city

The purpose of this research is to investigate whether or not patterns of human cognitive activity exist in different geographic [urban] areas and, if these exist, to map them.

If found, these patterns will constitute a new layer of information that was previously unavailable. The mapping of such patterns would allow for a fresh perspective over the physical world, one that integrates existing forms of mapped information with a new layer of real, second to second, cognitive measurements - an alternative geography - a new awareness of the urban landscape.



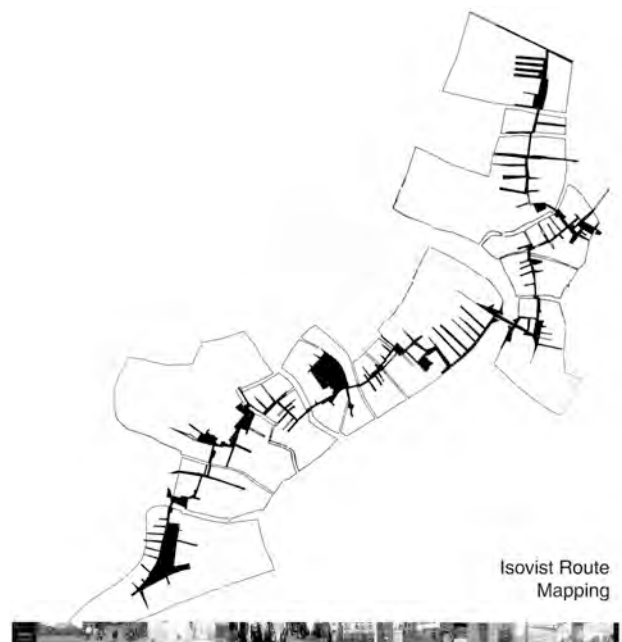
Establishing the existence of geographical areas with common cognitive activity may provide a new tool for such areas as mapping, urban design, urban management, architecture, retail, advertising, among others.

Previous undertakings that aimed at capturing cognitive information at a geographic level - namely those by the

psychogeographers of the 1950's and 60's, and especially that of urbanist Kevin Lynch - have employed qualitative techniques to extract information that enabled a portrayal of the relationship between individuals and environment.

Subsequent attempts have been variations of the different qualitative methods developed by the psychogeographers and by Lynch, more recently supplemented with quantitative environmental modeling such as that of space syntax.

This work proposes a novel quantitative approach towards helping further define this relationship between people and the environment. In addition, this mapping will allow a comparison with two main descriptors: that developed by Lynch and a quantitative one proposed by Benedikt: the isovist. Hence, attempting to shed light on the underlying cognitive process' that generate mental image patterns - urban mental models.



MEDIATED DIGITAL LIVENESS

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The notion of liveness and live events in the digital era have complex qualities that warrant interrogation and elaboration.

This study investigates digital liveness as an interactive mediation, focusing on the role of the audience and performer toward the medium. What is the potential of being in the here and now as an audience and a performer?

MDL [Mediated Digital Liveness] is expanding the historical contingent concept of performance, which is and will be in a state of redefinition over time. This study proposes to investigate innovative concepts of interaction design strategies using real-time mediated digital interactions, expanding the interactional possibilities and qualities between those present. Combining practical and theoretical frameworks, this research lives at the intersection of Art, Media, and Technology.

OBJECTIVES

- » Propose and develop live performance setups/designs to analyze MDL dynamics
- » Decode the experimental impact of digital liveness on audiences, performers, and media. Articulate a theoretical framework on the interaction design (interfaces) and communication between them.
- » Identify some of the most significant emerging principles and strategies of contemporary real-time art forms and live practices.

METHODOLOGY

- » Textual and discourse analysis combined with case studies scenarios.

AD HOC INTERDISCIPLINARY COMMITTEE

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Recent Projects and Live Performances



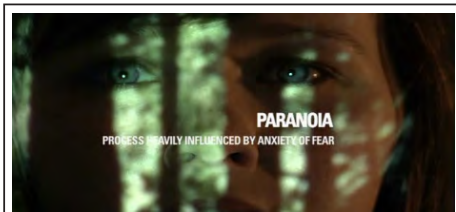
SWSX 2011 Chroma Event » Live Performance
Austin, Texas



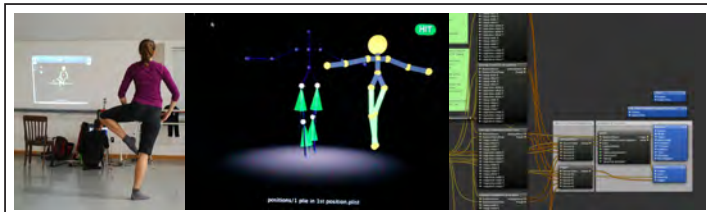
LPM 2011, *Human Rights Performed* » Live Performance
Collaboration with performer Daria Davis



Art Outside Festival 2010 & 2011 » Live Performance
Austin, Texas



The Design of Fear » Experimental Short Movie
Official selection MGM 2010, Motion Graphics Festival, USA

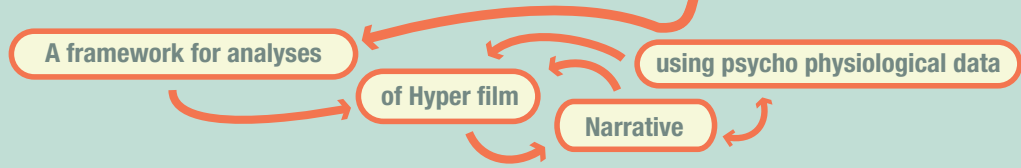
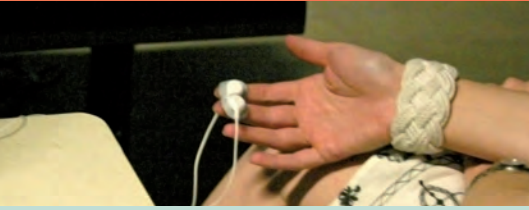


Super Mirror » Kinect Interface for ballet instruction and training » Educational Software
Consultants: Luis Revilla [SI, UT], David Justin [T&D, UT]
Collaboration with Sebastian Kox, Isabel Paiva, Zoe Marquardt, Natalia Em

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Emotional Biofeedback Storytelling



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The last two decades have witnessed an exponential increase in research connected to disciplines related to emotion, cognition (such as psychology and neuroscience) and the area of computer science and information technologies. Research in these various fields has become more intrinsically pervasive than ever and the study of emotion related phenomena, even when centered around the field of digital storytelling and interactive film, needs to consider the relevant research in related disciplines such as psychophysiology, affective computing, embodied interaction, new interactive narrative formats and film. In this last area of digital cinema and interactive film, the relationship between film studies and cognitive research on embodied emotions has become increasingly more relevant as new film experience formats are developed.

To address this problematic a research framework and subsequent prototype system for experimental work needs to be defined. This research will focus particularly on the study of audience emotional states and how biofeedback signals can be used to determine the flow of a hyperfilm database narrative.

Two different but related aspects will be analyzed:

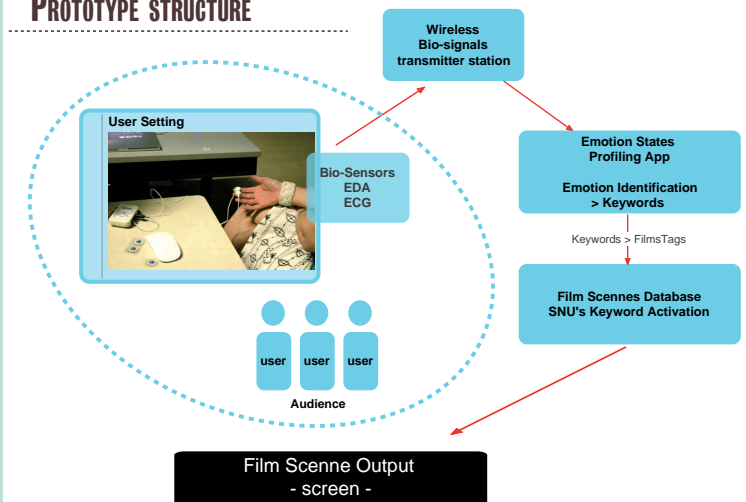
1st- How biosignals data can be used to foster a better immersive experience in narrative flow and interactive film;

2nd- What changes can be observed in the structure of established narrative formats of plots and genres;

This framework will inform experiments making inferences from data of recent studies in the field with specific focus on data from emotion biosignals captured through direct physiological measures, namely: Electrodermal Activity (EDA) and Electrocardiogram (ECG) and how they relate with narrative structures such as films or games.

ACKNOWLEDGEMENTS: to PLUX-Biosignal Engineering and its CEO Hugo Gambôa for the technical collaboration and equipment facilities, to Professor Nuno Correia for his continuous support and specially to Jacob Perkins for programming the prototype's code | This research is done in the framework of the PhD in Digital Media of the UT Austin-Portugal Program funded by FCT – Foundation for Science and Technology (ref. SFRH / BD / 48113 / 2008).

PROTOTYPE STRUCTURE



THEORETIC FRAMEWORK

Bio-evolutionary, re-combinatory framework

Emotion, Cognition and Film narrative

Affective Computing and Embodied Interaction

Digital Storytelling and Hyper-film structure

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