

HCI-Collab: Collaborative Network Supporting HCI Education in Iberoamerican Countries

Huizilopoztli, Luna-García*

Universidad Autónoma de Zacatecas, México, hlugar@uaz.edu.mx

Cesar A. Collazos

Universidad del Cauca, Colombia, ccollazo@unicauca.edu.co

Jaime Muñoz-Arteaga

Universidad Autónoma de Aguascalientes, jaime.munoz@edu.uaa.mx

Antoni Granollers

Universidad de Lleida, España, toni.granollers@udl.cat

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1 INTRODUCTION

Human-Computer Interaction (HCI) is a research, formative and practical discipline related to the design of interactive systems. Related to software development, HCI is a multidisciplinary discipline that lies at the crossroads of many scientific areas like psychology, design, computer vision, artificial intelligence, face recognition, motion tracking, among others. In recent years, there has been a growing interest in improving all aspects of the interaction between humans and computers. It is argued that for truly achieving effective Human-Computer Intelligent Interaction (HCII), there is a need for the computer to be able to interact naturally with the user, like the way human-human interaction takes place [1]. Since the publication of the ACM SIGCHI Curricula for Human-Computer Interaction in 1992 [2], Computer Science educators have evolved diverse implementations of these guidelines. These implementations have been mainly offered as elective courses or modules within other courses, such as Graphics and Multimedia, Software Engineering, or even the introductory sequence. However, only 3% of Computer Academic Programs accredited degree programs currently require an HCI course at the upper level [3].

In some IberoAmerican countries (Latin America, Spain, and Portugal) few studies have suggested that one of the main problems associated with HCI teaching is the lack of well-equipped usability labs, lecture facilities, and a scarcity of an appropriate number of well-trained teachers in HCI [4]. Specifically, in some Iberoamerican countries

* Place the footnote text for the author (if applicable) here.

like Costa Rica, Ecuador, Panamá, and Perú, these problems are bigger. Even it is increasing during the last decade, still, it is difficult to find in some of these countries enough HCI experts, because a great part of them never (or hardly ever) have received any HCI course in their academic programs, or if they received, currently they are working outside of Latin-American [5,6]. To find solutions to the above-mentioned problems, a group of HCI enthusiastic researchers/practitioners in 2016 started a network specially focused on HCI education in Latin American context, it is HCI-Collab: “Collaborative Network supporting HCI education in Iberoamerican countries”¹.

The next section describes some Iberoamerican initiatives supporting HCI education. Next, a description of the initiative HCI-Collab and some of the most important results are presented. Then a discussion is analyzed and finally, conclusions and further work are presented.

2 RELATED WORKS

This section gives a wide overview of the main initiatives that have been organized that support HCI education in the Latin-American context.

2.1 HCI SPECIFIC ASSOCIATIONS

AIPO (Asociación Interacción Persona-Ordenador)² is a multidisciplinary society oriented towards people whose cultural background is primarily associated with the Spanish language and culture, regardless of ethnic and geographical differences. AIPO, started its way in 1999, being the first HCI society in the Spanish-speaking context and it is open to everyone belonging to the above community. Its members are mainly university researchers, doctoral students, and professionals coming from the industry, all of them, specialized in HCI [7].

ACM SIGCHI LOCAL CHAPTERS

ACM SIGCHI Local Chapters help the ACM SIGCHI³ community to promote and advance Human-Computer Interaction locally and around the globe. For the developing parts of the world, Local Chapters often serve as the first front to promote HCI education, research, and practice in the region. SIGCHI Local Chapters are unique in building bridges between academics, practitioners, and students in the field of HCI. There are some ACM SIGCHI Local Chapters in Ibeoramerica. One of the first chapters was CHISPA, which is the Spanish ACM SIGCHI Chapter. Its main goals are to promote the scientific advancement of the field of Human-Computer Interaction (HCI) in Spain, to sponsor conferences, workshops, courses, and other HCI activities in the country, and to serve as a bridge between HCI related groups and organizations in Spain and similar entities worldwide.

In the last years, some new local chapters have been created (Table1).

Table 1: SIGCHI Latinamerican Chapters.

Name	Country
BR-CHI	Brazil
CAFETEROS	Colombia
SANTIAGO	Chile
QUITO	Ecuador

¹ <https://hci-collab.com>

² <https://aipo.es/>

³ <https://sigchi.org/>

Name	Country
GUATEMALA CITY	Guatemala
MEXICO	México

2.2 CONFERENCES

The first Latin American Conference on HCI (CLIHC—in Portuguese: *Congresso Latino-Americano de Interação Humano-Computador*, and in Spanish: *Congreso Latinoamericano de Interacción Humano-Computadora*) was held in Rio de Janeiro, Brasil, between the 17th and the 20th of August 2003. The conference was organized by researchers from diverse Latin American countries, as an attempt to foster collaborative projects among countries that share much of their Iberian culture and many of their social and economic challenges [8].

Nevertheless, if contextualize in a Spanish-speaking context, *Interacción: Congreso Interacción Persona-Ordenador*, with a little bit more trajectory, starting in 1999 in Granada (Spain). *Interacción* is an annual event that counts with the participation of the Spanish Universities that have HCI research groups. Over the years, the event gained active participation from abroad, mostly from Latin-American countries but also from other countries. Due to this fact, *Interacción* is named international conference.

Integration with Latin America is something that has been on AIPO's mind since its birth. *Interacción* count with three special editions:

- *Interacción* 2009, in the tenth edition, was the first time that the conference was held in bi-location modality, In Barcelona (Spain) and Armenia (Colombia).
- *Interacción* 2012, was the second experience looking at the integration with these two so related and close communities. This year, *Interacción* 2012 at Miguel Hernández University (Elche, Spain) and MexIHC 2012 at Instituto Tecnológico Autónomo de México (Mexico City, Mexico), took place the first joint conference between the HCI Spanish and Mexican communities⁴.
- *Interacción* 2017 was the first time that the event took place entirely outside Spanish territory, specifically in Cancun, Mexico⁵.

In the same way, the Ibero-American HCI-Collab network has carried out 6 editions of its main event, the Ibero-American Conference on Human-Computer Interaction (ICHCI), which has been held in the following locations.

- I-ICHCI to IV-ICHCI, the first four editions were held in the city of Popayán (Colombia) during the years 2015-2018.
- V-ICCHI, as a clear indicator of its opening, for the first time, the fifth edition was developed was outside the territory of Colombia, specifically in Puebla (Mexico) in 2019.
- VI-ICCHI, for the 2020'th edition everything was prepared to be held in Perú, nevertheless, due to the COVID-19 pandemic, the conference moved to online. The virtual headquarters were the University of Santa Maria de Arequipa (Perú).
- VII-ICCHI⁶. is going to be held at Mackenzie University, in São Paulo (Brazil) during the first week of September.

⁴ <https://aipo.es/node/16>

⁵ <https://aipo.es/congresos/interaccion/xviii-congreso-internacional-de-interaccion-persona-ordenador-interaccion-2017>

⁶ <https://hci2021.web.app/>

Books and Teaching materials:

- "Design of user-centered interactive systems" is a book [12] where the contents make available to the reader the knowledge and techniques necessary to be able to make the designs of the interfaces of interactive systems easily usable by all users and, at the same time, accessible to all of them. The contents are based on the principles of usability and accessibility. Over time, and in order not to be completely outdated, this work has been continued in web format. The current version⁷ adopts the form of an HCI course, as it is the basis of a degree course at the UdL.
- "Human-Computer Interaction in Mexico" book [10], the main objective of this book is to support introductory Human-Computer Interaction (IHC) courses at the university level, and as a guide for advanced courses. Additionally, it presents advances in the research carried out in Mexico in IHC and related topics.
- Marco's book [11] begins by presenting a state of Human-Computer Interaction (IPO), a discipline that arises in parallel to the phenomenon of popularization of computer systems and that aims to facilitate the use of computers as much as possible. The author starts from the IPO as a discipline from where she covers one of the key points of our times: information.

Workshops:

- CHIJOOTE : This is an HCI teaching set of workshops organized by AIPO (<https://aipo.es/>) especially focused on the Spanish-speaking community. The first edition was organized by Universidad Castilla la Mancha (Spain) in 2005, and then (2018, 2019) during the yearly "Interacción congress" there were the new versions of this workshop, where not only participated people from the academy but industry to discuss different strategies have been implemented to support HCI education [13].
- Workshop on Infotainment Systems and Intelligent Systems (WoSI2)⁸, on November 07, 2019, the First Workshop on Infotainment Systems and Intelligent Systems - "1WoSI2" was held at the Universidad del Cauca, Popayán, Colombia. This first workshop intended to initiate research, collaboration, and linkage efforts. The Second Workshop - "2WoSI2" was held, at the Universidad Católica de Santa María in Arequipa, Peru, from September 16 to 18, 2020, being the virtual headquarters; The Third Workshop on Infotainment Systems and Intelligent Systems - "3WoSI2" is going to be held at Mackenzie University, São Paulo, Brazil, September 8th, 9th, and 10th, 2021. The main goal of this "3WoSI2" is to present advances in strategies and topics of interest, also, to open the collaborative space to the community of researchers in LATAM. With the development of these actions, we intend to consolidate the work carried out in the two previous editions, so that LATAM contributes to the scientific and technological development of Infotainment Systems and Intelligent Systems for the automotive industry and related industries.

3 HCI-COLLAB

HCI-Collab is a Collaborative Network of specialists to improve HCI Education in some Iberoamerican countries (Latinamerica, Spain, and Portugal). HCI-Collab has a website (<https://hci-collab.com/>) that helps meet training and updating needs in the HCI area in this region (see figure 1).

⁷ www.curso-interaccion-persona-ordenador.com

⁸ <https://hci2021.web.app/workshop>

> Presentación

> Proyecto

> Objetivos

> Participantes

> Personas

> Universidades

EL PROYECTO

La Interacción Humano-Computador (HCI) en la actualidad está presente en cualquier software y por ende es una asignatura obligatoria en todo el mundo. La interfaz forma parte de un entorno cultural, físico y social y por tanto es necesario tener en cuenta una serie de factores a la hora de diseñarla. Es así como el diseño de la interfaz se ha convertido en un elemento crítico en el desarrollo de productos software y hardware, y es uno de los principales factores que influyen en el éxito y competitividad de las aplicaciones software.

Actualmente, los sistemas interactivos prestan una atención cada vez mayor a las interfaces, demandando cambios en el desarrollo de los programas. Un sistema interactivo ya no es sólo juzgado

El área de Interacción Humano-Computador (HCI) comienza a ser reconocida como una disciplina dentro del currículo académico a comienzos de los años 80. Desafortunadamente en la mayoría de los países iberoamericanos esta área no ha evolucionado de la forma esperada. Muchas razones han influido para que HCI no sea considerada un área de formación básica en los currículos actuales en los programas de Ingeniería de Sistemas (nombre equivalente a las ciencias de la computación) en éstos países. Esta iniciativa pretende definir los mecanismos que se podrían llevar a cabo para incursionar en el tema de HCI, definiendo una propuesta curricular en esta área.

Figure 1. HCI-COLLAB web site (in Spanish).

This network supported by AUIP (Asociación Universitaria Iberoamericana de Postgrados⁹) tries to promote sharing experiences on HCI not only in the academia but in the Industry sector [9]. Currently include 47 universities from different Iberoamerican countries (Table 2).

Table 2: Participants Universities in HCI-Collab.

Country	Number of Universities
ARGENTINA	6
BRAZIL	2
CHLE	4
COLOMBIA	12
COSTA RICA	2
CUBA	1
ECUADOR	1
ESPAÑA	7
MÉXICO	6
PANAMÁ	1
PERÚ	3
PORTUGAL	1
VENEZUELA	1

⁹ <https://www.auiip.org/es/>

The HCI-Collab network have two main activities:

1- HCI Workshop (Jornadas Iberoamericanas de HCI), which (as previously mentioned) have been organized in Colombia, Mexico, Perú, and the current year will be organized by Universidad Mackenzie (Sao Paulo, Brasil).

2. Webinars: Since 2019, HCI-Collab began to organize a set of webinars (2 per month) where distinguished people from academia and industry are invited to present what they are doing on HCI (the major part are Spanish-speaking speakers). These talks (lasts at most 30 minutes) are stored in the Website of the Network and the videos are stored in a YouTube channel, in order people can use them as material didactic in different HCI courses. It is possible to find these resources in the next links.

- 2019: <https://hci-collab.com/2018/12/20/wipo2019/>
- 2020: <https://hci-collab.com/2020/01/28/wipo2020/>
- 2021: <https://hci-collab.com/2021/01/08/wipo2021/>
- Youtube channel: <https://youtube.com/channel/UCXx2tSrp2pyAr7uBwCdSB8w>

In the last decade, the HCI has had a special relevance in the Latin-American region. A large number of researchers of the HCI community have presented their contributions at several conferences. However, some problems arise and need to be addressed in the HCI area in the Latin-American region, such as the lack of training strategies and the availability of content and educational resources in Spanish. One solution was to develop HCI contents in terms of different formats such as demos, slides, handouts, textbooks, user experiences analysis, and usability tests. The advantage of digital educational resources versus traditional formats is that they can be accessed and reused to be part of new online courses with different learning styles at the university level. A user can have access to educational resources with additional multimedia features (such as video, audio, animation, and interactive applications, and 3D content), and finally, they can update as often as necessary.

The digital resources, as well as the experiences and successful projects presented in the webinars, can be capitalized under a platform as a collaborative network website to support the teaching-learning processes in the area of Human-Computer Interaction at the Ibero-American level. A large amount of material saved in the HCI Collab web site is available (see figure 1). This (repository represents a training corpus that can use to complement HCI education, it contains a larger diversity of 69 HCI webinars considered to be presented from 2019 till 2021 (<https://hci-collab.com/2018/12/20/wipo2019/>)). Then the students can find several webinars distributed in the following HCI fields: 9 webinars in Computer Sciences, 24 webinars in Human Factors, 33 webinars in Interaction Design and, 3 webinars in Use and context. The initiative is an effective strategy to promote knowledge about various HCI issues, which will be presented by renowned notably Ibero-American researchers and entrepreneurs, in particular from Argentina, Brazil, Chile, Colombia, Costa Rica, Cuba, Ecuador, France, Guatemala, Mexico, Peru, Spain, USA, and Venezuela (See figure 2).



Figure 2. Webinars given by HCI researchers from different countries.

According to the HCI-Collab network, the objective of the initiative to be achieved is twofold because, on the one hand, it is intended to contribute to the generation of educational resources in the HCI area and, on the other hand, to help in the formation of communication mechanisms between professionals and academics. It can be said that carrying out the HCI webinars for a year will favor new forms of organization and participation, allowing the emergence of new collaboration scenarios in which you can attract, manage to learn, and increase knowledge, which they have added value for professionals.

4 DISCUSSION

HCI is a promising area for teaching and research in some Iberoamerican countries. In that way, it is necessary to define some strategies and policies that imply a good appropriation of the importance of the area. Next, some strategies that may be appropriate to foster HCI are described:

- To inform people about HCI: Socialize and sensitize community (academics and professional staff) about the real benefit of HCI through a set of introductory speeches of how HCI is immersed in many aspects of our daily life and different knowledge areas.
- Optative courses in HCI: It is very difficult at first instance HCI courses could be included in the computer Science Curricula, in that way a mechanism to begin to promote the area could be offering optative courses at different level (undergraduate/graduate).
- Interdisciplinary work: Day by day people need abilities and competencies to allow them to work in a world where it is fundamental to work with people from different scenarios countries, cultures, among others [8]. In that way, it is especially important to work and to collaborate with people from diverse backgrounds (Psychology, Anthropology, Graphics Design, Computer Sciences, Communication, Biology, Artificial Intelligence, among others) to permit people, among others interdisciplinary competences, to communicate properly in this worldwide context.
- Working Networks: Creation of networks of people tending to promote the HCI discipline and be a starting point to propose common projects. In that way, integration with other countries, different communities,

and the support of different organisms like SIGCHI, AIPO, HCI-Collab in any kind of association, will enable to establish links, create co-working spaces, sharing experiences, generating a collaboration network on HCI.

Finally, we would like to raise questions such as if pertaining to Iberoamerica influences on HCI education growth? or, if are there any cultural, linguistic or transnational influences?. To answer, in terms of teaching, apart from the linguistic aspect, the other are quite the same all over the world. About the language, we must be conscious that, although English is the international *de facto* standard language, Spanish-speaking community is quite significant (the 3rd behind English and Chinese), and not everybody has enough English level to understand required literature. Then HCI-collab community are building the HCI basis to bring this knowledge to much more people. Other aspect is culture. It is obvious that culture influences every aspect of our lives and can find many examples in ICT software or devices. Nevertheless, when we talk about technology, unfortunately, we have to admit that we are totally globalized. Everywhere and everybody use the same devices, with mimetic interaction designs, minimizing the (so interesting) cultural impact.

5 CONCLUSIONS AND FURTHER WORK

Whereas in some contexts the role of HCI is still underestimated and it is considered as an ancillary discipline of Computer Science, in other situations HCI has stronger relations with other disciplines and it is a fundamental part of educational curricula (e.g., Design) that are different from Computer Science. For that reason, this initiative (HCI-Collab) aims to have a better perspective and enlarge the vision to the Iberoamerican area, for exchanging ideas, comparing experiences, and analyzing relations with people from academy and industry working on HCI.

Although the experience in some Iberoamerican countries is not as vast as the US, England, North of Europe, or other countries, the HCI area in Iberoamerican countries begins to increase in a good manner. There is important participation in important workshops, recognized journals in the HCI area, and some of the Iberoamerican researchers begin to be invited as keynote speakers in many international conferences. All these factors convey to think HCI area is promoting as increasing research and work area in these countries. Iberoamerica is too far to have the glass full but at least is not empty. This paper has depicted some initiatives supporting HCI education in some Iberoamerican countries and some strategies to foster this important area.

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