

MSc Human Computer Interaction [HCI]: the Domain Beyond Traditional Green Web Systems– Indian Educational Context

Prantosh Kumar Paul

¹*FBAS, Indian Institute of Engineering Science and Technology [IIST], Shibpur- An Institute of National Importance, WB, India.*

*Corresponding author: prantoshkpa@gmail.com

Abstract

Human Computer Interaction is a field that is concerned generally with Human Centric System and is concerned generally with making interface which has usability or user friendliness. Human Computer Interaction means interaction or affiliation with human or people with computer or machine. More clearly Human Computer Interaction is allows user to effectively and efficiently accomplish the task for which it was design and one that uses rate positively on opinion or emotional scale. Human Computer Interaction restricted on computer but it can be wider than that. Today it is actually nothing but the planning, designing and development of computer devices and system which are much more intelligent and interactive and known as pulse of human being. This paper is talks about so many aspect of Human Computer Interaction including need and possibilities of proposed MSc- Human Computer Interaction in Indian context.

Keywords: Human Computer Interaction, HCI, MMI, Usability Engineering, Information Design, Information Design, Information Architecture, Information Science

The main aim and objective of Human Computer Interaction and related domain is including improving the interaction between user and machine or computing devices. Human Computer Interaction also treated as design and evaluated and implementation of computer monitor or other user interface [04, 09]. The ultimate aim of Human Computer Interaction is minimizing barrier between the human expectation and computer understanding task. The potential of this field is basically responsible for design and development of website, graphical interface, and instructiveness. However, in present context, professional in this field is very much limited and not in India but also around the world; but there are huge potentiality to start Human Computer Interaction based educational programme as full-fledged

degree or specialization or as optional paper with concerned or allied nomenclature. Academic and professional initiatives are very much essential in this respect [08, 13].

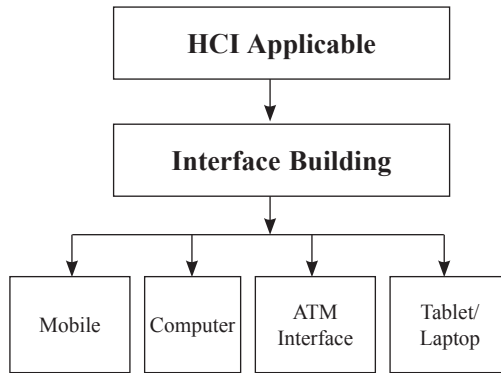


Fig. 1: The Fundamental application of HCI [PK Paul, 2013]

Objective

The main aim and hypothesis of this study is includes but not limited to as follows—

- To know basic about Human Computer Interaction; including its basic feature and characteristics;
- To learn about the basic knowledge about the need and importance of Human Computer Interaction in educational programme or as specialization of the programme;
- To learn about the potentiality and opportunities towards Human Computer Interaction based degree and diploma programmes;
- To know about the potentiality of the proposed MSc- Human Computer Interaction programme in Indian educational context;
- To learn about the SWOT of the MSc- Human Computer Interaction in Indian scenario and nomenclature for further research.

Human Computer Interaction and its Need in Academics

Assessing the usability of an interface and recommending way to improve it the purposes of the usability engineers and Human Computer Interaction expert. Human Computer Interaction is focuses on user working specially with computer rather than other kind of machines or designed artifacts [16, 18]. Human Computer Interaction is needed in educational institute with full fledged, specialization and optional paper for the following reason—

- To create better and healthy interface and computer graphics and Icon;
- To design simple, reliable, advance and fast information system and interface including mobile,

- ATM, public information centre, computer, off line system, internet, online search engine and so on;
- To design good and healthy search engine including demand based option and alternative according to cognitive walkthrough;
- To help community and user of television, video system, website of the concerned organization;
- To develop public information centre and system for creating information infrastructure much more usable.

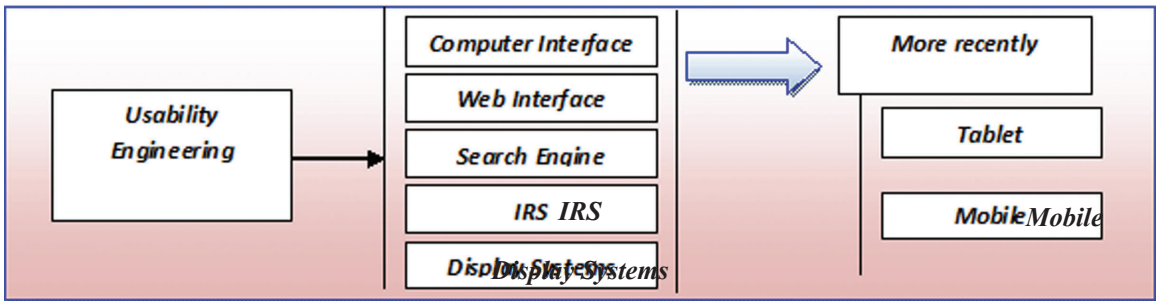


Fig. 2: Depicted Application of Usability engineering in several Information Systems and infrastructure

Indian Educational Systems

India is the largest educational system in the world, with huge higher learning centre, research centre, colleges, universities, institute of national importance and so on. In Engineering and technical sector, we are witness of near about 5000 institute [11, 13]. Hence apart from traditional educational institute, in engineering institutes also, Human Computer Interaction may be implemented. The *figure -3* is showing number of institutions in India.

Universities/ Higher Educational Institutions	In Numbers	Location
Central Universities	44	Pan India with 28 States and UT
State Universities	304	Pan India with 28 States and UT
State Private Universities	165	Except some states and UT
Deemed Universities	130	Except some states and UT
Indian Institute of Technology [IITs]	16	Bhubaneswar, Chennai, Delhi, Gandhinagar, Guwahati, Hyderabad, Indore, Jodhpur, Kanpur, Kharagpur, Mandi, Mumbai, Patna, Ropar, Roorkee and Varanasi

National Institute of Technology [NITs]	30	Agartala, Allahabad, Arunachal Pradesh, Bhopal, Calicut, Delhi, Durgapur, Goa, Puducherry, Hamirpur, Jaipur, Manipur, Meghalaya, Mizoram, Nagaland, Jalandhar, Jamshedpur, Kurukshetra, Nagpur, Patna, Raipur, Rourkela, Sikkim, Silchar, Srinagar, Surat, Karnataka, Tiruchirappalli, Uttarakhand, Warangal
Indian Institute of Management [IIMs]	13	Calcutta, Ahmedabad, Bangalore, Lucknow, Kozhikode, Indore, Shillong, Rohtak, Ranchi, Raipur, Tiruchirappalli, Udaipur, Kashipur
Indian Institute of Science Education and Research [IISERs]	05	Kolkata, Bhopal, Mohali
Indian Institute of Engineering Science and Technology	01	Shibpur
Other Central Funded Higher Educational Cum Research Institutes	Approximately 150+	Pan India with 28 States and UT

Fig. 3: showing number of institutions in India.

Hence, in many such institutions, Human Computer Interaction or related nomenclature r subject may be offered such as- Man Machine Interaction/ Human Centered Computing/ Usability Engineering, User Experience Design and so on [11, 19]. Possible degree and award may be as follows *[listed in figure-4]*—

Nomenclature / Level	Subject/ Domain
BSc/MSc/BTech/MTech	Information Technology/ CSE- Human Computer Interaction
BSc/MSc	Information Science - Human Computer Interaction
BSc/MSc	Human Technology Management

Fig. 4: showing possibilities of HCI related programme in Indian educational context

MSc Human Computer Interaction: Overview

Regarding proposed programme i.e. MSc- Human Computer Interaction may be offered with full fledged programme, or specialization or module based elective. However, this structure is mainly proper in two approaches in first approach. It is possible to start MSc- Human Computer Interaction Programme initially with 1st semester and for that, we deemed total 20 papers including one dissertation or project. In India, most of the educational institutes are offer one paper with 2-4 credit and 6 credit of dissertation. And each credit deals with around 30 hour of learning. Hence the proposed full-fledged MSc- Human Computer Interaction is deals with common MSc structure i.e. 2 year and 4 semesters with 2-4 credit based on theory and practicals.

Name of the proposed papers	Credit of the Paper	Lab [Yes/ No]	Interdisciplinary Interaction Required or Not
<i>Semester-1</i>	<i>Semester-1</i>	<i>Semester-1</i>	<i>Semester-1</i>
Information System and Technology	3 credit	No	Possible in existing department such as IT/CA/CSE
Human Computer Interaction-Fundamental	3 credit	No	Possible in existing department such as IT/CA/CSE
Management Information System	3 credit	No	Possible in existing department such as IT/CA/CSE/Management
Social Computing and People	3 credit	No	Possible in existing department such as IT/CA/CSE
Social Computing Practice	4 credit	Yes	Possible in existing department such as IT/CA/CSE
<i>Semester 2</i>	<i>Semester 2</i>	<i>Semester 2</i>	<i>Semester 2</i>
Human based Genetic Algorithm [HBGA]	3 credit	No	Possible in existing department such as IT/CA/CSE [Better to start in separate department]
Computer Applications and HCI	3 credit	No	Possible in existing department such as IT/CA/CSE
Search Engine and Usability Engineering	4 credit	Yes	Possible in existing department such as IT/CA/CSE [Better to start in separate department]
Industrial Information System	3 credit	No	Possible in existing department such as IT/CA/CSE
Wiki and Blogs and Web Technology	2 credit	No	Possible in existing department such as IT/CA/CSE
<i>Semester 3</i>	<i>Semester 3</i>	<i>Semester 3</i>	<i>Semester 3</i>
HTML and Basic Web development	3 credit	Yes	Possible in existing department such as IT/CA/CSE

Entertainment Informatics	2 credit	Yes	Possible in IS/IT/ Computing Department
PHP and Usability Testing	3 credit	Yes	Possible in existing department such as IT/ CA/CSE [Better to start in separate department]
Dreamweaver and Multimedia Basic	3 credit	Yes	Possible in existing department such as IT/ CA/CSE
Knowledge Management- Contextual	3 credit	No	Possible in existing department such as Management/ IT/CA/CSE
<i>Semester 4</i>	<i>Semester 4</i>	<i>Semester 4</i>	<i>Semester 4</i>
Usability Engineering and Human Approach	3 credit	No	Possible in existing department such as IT/ CA/CSE [Better to start in separate department]
Usability Testing and Web Engineering	3 credit	Yes	Possible in existing department such as IT/ CA/CSE [Better to start in separate department]
Web Metrics Tools and DBMS	4 credit	Yes	Po Possible in existing department such as IT/ CA/CSE [Better to start in separate department]
Advance Communication and IRS	4 credit	Yes	Possible in existing department such as IT/ CA/CSE
Multimedia and 3 D	4 credit	Yes	Possible in existing department such as IT/ CA/CSE [Better to start in separate department]
Project	6 credit	NA	Depending upon specialization

Fig. 5: Showing proposed MSc-Human Computer Interaction Degree mentioned in first approach

Though in second approach, only last semester we proposed some core paper or elective as and along with general papers like *MSc-IS* [Which is listed in fig. 6]—

- Human Computer Interaction and Web development.
- Human Computer Interaction and DBMS.
- Human Computer Interaction and Communication System.

- Multimedia System and Usability Engineering.
- HTML ad PHP.

Hence, in all these practice Human Computer Interaction based PG programme may be started by arrangement of guest lecturer or adjunct professor or similar; if organization is highly supported by the faculty with skill of Human Computer Interaction then first approach may be suitable. Initially, however to see the user and student demand second approach may be chosen.

Common MSc-Information Science general course component at BIT Mesra, Madras University and WBUT
BIT Deemed University: - 1.Foundation of Information Science 2.Theory & Practices of Knowledge Organization and Information Processing 3. Fuzzy Logic & Neural Networks Applications 4 .Internet And Web Technology 5. Data Structures 6.Data Base Management System 7.Operating Systems 8.Computer Communication Networks 9.Management Of Information System & Centers10.Information Psychology &Information Architecture 11.Research Methodology &Quantitative Techniques 12.Digital Library And Multimedia And Other 2 Electives
Madras University:-1.Evolution of information science 2.information sources 3.Knowledge organization 4.Introduction to information technology 5.Soft skill 6.Management of information centre Information service 7.Information processing-classification 8.Information and Communication technology 9.Information storage and retrieval 10.Information processing-cataloguing 11.Research methods 12.Preservation of information material 13.Knowledge management 14.Marketing of information 15.Digital libraries And electives, internship.
WB University Of Technology:-1. Mathematics for information science 2.Data structure with c/c++ 3.Computer organization 4.Business communication 5.Library and information science 6.Object technology 7.Operating system and system programming 8.Software engineering 9.Information theory 10.Soft computing 11.Digital image processing 12.Values & ethics in profession 13e-commerce

Fig. 6: Shwing programme structure of some MSc-IS Degrees in Indian University

Findings

- WebSAT, WebCAT, FLUD, WebVIP are important guidelines and metric tool for advance and sophisticated HCI practice.
- Still academic programme on Human Computer Interaction, Human Centred Computing or Usability Engineering are very much limited around the world and even in India.
- Out of 600+ universities and around 25000+ institutes, not a single university offer Human Computer Interaction degree as full-fledged manner.
- Suggestion:-
- For better Human Computer Interaction practice proper cognitive study and multimedia is very much needed and thus related degree needs such knowledge gradients.
- Proper initiate, academic programme and knowledge session are very much limited in the Human Computer Interaction and related field.

- Depending upon demand Human Computer Interaction programme may be started with MTech/ ME degree.

Conclusion

Information is one of the important and most valuable aspects in this age. For better information utilization and uses, information infrastructure is essential and such are ultimately depends on better information architecture. Proper and advance Information Architecture is depends on Human Computer Interaction and usability. Integration of multimedia, image processing, artificial intelligence and expert system needed for better Human Computer Interaction practice; hence during course design such things are essential to see and implement.

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