Research Work for Doctor of Science (D.Sc.) Degree

**HCI**

*My Contribution*

Since childhood, I am interested in Drawing and Painting, especially Oil Portrait Paintings, Natural Wood Art, Photography, etc. During school and college days my paintings (portraits) got first prizes in many competitions. My friend circle of “Chitrakala Mahavidyalaya Nagpur” helped me a lot for nurturing this hobby. When I entered in the field of Computers, I was fascinated by several Computer Technologies like Multimedia Technology, Usability Engineering, Human Computer Interaction (HCI), Graphical User Interfaces (GUI), Digital Film Design, Graphics Design, Animation Design, Streaming Multimedia, Web Design, Media Design, E-Learning, M-Learning, Digital Game Design etc. In addition to this, I have lot of interest in the fields like Ergonomics, Behavioral Sciences, Human Psychology, Human Thought Process and Mental Models, etc. My hobby and profession could perfectly matched and this unique blend produced wonderful results.
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1. HCI or Usability Engineering

1.1. Introduction to Ergonomics and HCI (or Usability Engineering)

Ergonomics is an applied science concerned with designing and arranging things people use so that the people and things interact most efficiently and safely. This is the science concerned with designing safe and comfortable machines for humans. For example,

- Designing furniture that avoids causing backaches and muscle cramps.
- Automobile Design which is suitable and comfortable for human anatomy.

Human Computer Interaction (HCI) or Usability Engineering or User Interface Design is my one of the specialization, which is an extended branch of Ergonomics. Human–computer interaction (HCI) researches the design and use of computer technology, focusing particularly on the interfaces between people (users) and computers.

Human Computer Interaction (HCI) involves the study, planning, and design of the interaction between people and computers. It is often regarded as the intersection of computer science, behavioral sciences, design and several other fields of study.

1.2. NLP and HCI

Natural Language Processing (NLP) is a field of computer science, artificial intelligence, and linguistics concerned with the interactions between computers and human (natural) languages. Specifically, it is the process of a computer extracting meaningful information from natural language input and/or producing natural language output. In theory, NLP is a very attractive method of HCI. The HCI and NLP are unifying their effort to build innovative intelligent human computer interfaces.

1.3. HCI and E-learning

E-Learning and M-Learning - Extensive Use of HCI (Branch of Ergonomics): E-learning is one of my specialization fields. My topic of Ph.D. Thesis is “Study of Effective Design Methods and Implementation of E-learning Software”. The artistic nature and multimedia technology have helped me a lot to develop E-learning software.

2. My Contributions

2.1. Guided PhD Thesis

Guided PhD Scholars in HCI

<table>
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<th>SN</th>
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<tr>
<td>1.</td>
<td>Dr. Manoj B. Chandak, Associate Professor and Head, RKN Engineering College, Nagpur</td>
<td>“Machine Translation Strategies and Speech Synthesis Initiatives for Indian Languages”</td>
<td>Awarded on 16 Mar 2013 by RTM Nagpur University</td>
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2. Dr. U. S. Junghare, SGB Amravati University
   “Study of Implementation Issues of 3D Visualization on Mobile Platforms” Awarded on 20 Sept 2013 by SGB Amravati University

3. Dr. Pravin Ramkrishna Futane, Associate Professor and Head, Sinhagarh Engineering College, Pune
   “Generic framework of Sign language Recognition” Awarded on 12 Dec 2015 by SGB Amravati University

4. Dr. Prafulla E Ajmire, Khambaon
   “Study of various Methodologies for Handwritten Character Recognition and Development of algorithm for Off-line Handwritten Marathi Text Recognition” Awarded on 15 May 2017 by RTM Nagpur University

5. Mr. Kishor H. Walse, Associate Professor and Head, Anuradha Engineering College, Chikhali
   “Effective Pervasive Adaptive Mobile Interfaces” Awarded on 26 Oct 2017 by SGB Amravati University

PhD Submitted

6. Miss. Sharda A. Chhabria, GHRCE, Nagpur
   “Intelligent Gesture Recognition to Design More Efficient & Intelligent Multimodal System” (submitting stage) Submitted Thesis to PhD Cell RTM Nagpur University.

2.2. Guided MTech or Mphil Thesis

I have guided few MTech projects on this topic.

- Ms. Ekta Pas: “Design of a human-computer interface system (HCI)”
- Mr. Manish K. Assudani: “Efficient Adaptive Mobile Interface Through Web Browsing”
- Ms. Apeksha Sakhare, “Wireless Touch Screen Controller for Vehicle”
- Ms. Kushbu Thakkar “Text Categorization for Digital Forensic”
- Mr. Shantanu Lohi, “Analysis and Design of a Comprehensive Text Categorization Approach for English Language”
- Mr. Nilesh M. Shelke, “Restricted Bilingual Domain Query Processing System using Intelligent Software Agents”
- Ather Eqbal, “More efficient Recognition of Handwritten Urdu Characters”

2.3. Audio-Visual Simulations

I have developed 50 hours film for teaching C language programming through screen capturing techniques. In addition to this, I have developed 5 hours movies for teaching C++, VB and HTML. Next few sections highlight this work.

2.4. My Research Papers in the Field of HCI or Usability Engineering

I have published or presented total 367 research papers. The HCI or Usability Engineering related research papers (total 174) are as follows:

- International Journal Research Papers (77)
- International Conference Research Papers (52)
• National Conference Research Papers (50)

2.4.1. International Journal Research Papers (77)

Rajiv Dharaskar


Smita R Khond


M. K. Assudani


Ayesha Butalia


Pragati G. Meshram


Apeksha V. Sakhare

M. B. Chandak


17. M. B. Chandak, Dr. Rajiv Dharaskar, Dr. V. M. Thakare, “Emotion and Sentiment Analyzer: NLP Based Method to Extract Sentiments Related with Specific Topics”, International Journal of Artificial Intelligence & Applications (IJIAA), South Korea, Vol. 4, 2011

S. A. Chhabria


U. S. Junghare

34. U. S. Junghare, Dr. V. M. Thakare, Dr. R. V. Dharaskar, Dr. S. S. Sherekar, “Analysis of Information Visualization Techniques for Abstract Data on Mobile Devices”, International Journals of Computer Science


Pravin Futane

43. Futane Pravin, Dr. Dharaskar Rajiv, Dr. V. M. Thakare, “Hand-Made Colored Gloves Gesture Recognition”, International Journal of Graphics & Image Processing (IJGIP), (A quarterly refereed Journal Published by: International Forum of Researchers Students and Academician (IFRSA)), http://www.ifrsa.org/images/ijgipissue2/12%20twelve.pdf , Google Scholar Citation: 2


Nilesh M. Shelke


P. E. Ajmire


K. H. Walse


69. K. H. Walse, Dr. R. V. Dharaskar and Dr. V. M. Thakare, “Performance Analysis of MLP and SVM based Classifiers for Human Activity Recognition using Smartphone Sensors Data”, International Conference on
Innovations and Advancements in Computing ICIAC-2016, GITAM University, Hyderabad, India., March 18-19, 2016, Published in International Journal of Research in Engineering and Technology (IJRET), Volume: 05 Special Issue: 05 |, pp. 7-11, May 2016, https://pdfs.semanticscholar.org/2a45/36b1eebc4a187eaaeaa819e76d8db4ffdc8e8.pdf, Best Paper Award

Rajashri Shelke


2.4.2. International Conference Research Papers (52)

Rajiv Dharaskar


M. B. Chandak


Khushboo S. Thakkar

Pravin Futane
91. Pravin Futane, R. V. Dharaskar, “Hasta Mudra”: An Interpretation of Indian Hand Sign Gestures”, IEEE 3rd International Conference on Conference on Electronics Computer Technology (ICECT 2011), Kanyakumari,


Ekta R. Pashine


S. Lohi


Manish H. Bhagwani


Pradeep N. Fale


Pragati G. Meshram


Smita R. Khond


Ujwala Junghare


B. V. Wakode


Nilesh M. Shelke
S. A. Chhabria


120. Nilesh M. Shelke, Dr. R. V. Dharaskar, “Survey of Fusion Techniques for Design of Efficient Multimodal Systems”, IEEE International Conference on Machine Intelligence Research and Advancement, ICIMIR A-2013, 21-23 Dec 2013, pp. 486-492, ieeexplore.ieee.org/xpls/abs_all.jsp?arnumber=6918880, Google Scholar Citation: 2, Scopus Citation: 1


122. Nilesh M. Shelke, Dr. R. V. Dharaskar, Dr. V. M. Thakare, “Mobile Data Mining for Mobile Devices Using Personalization”, International Conference on Innovations and Advancements in computing (ICIIAC2016), GITAM university, Hyderabad, 18-19th March 2016

123. Nilesh M. Shelke, Dr. R. V. Dharaskar, Dr. V. M. Thakare, “Classification of super market dataset using mobile devices”, IDES International Joint Conference on Recent Trends in Information Processing, Computing,
2.4.3. National Conference Research Papers (50)

Rajiv Dharaskar


137. R. V. Dharaskar, “Multimedia, E-Learning, E-Health, Telemedicine Techniques to Enhance the Performance and Efficiency of Para Medical Staff of India, Underdeveloped and Developing Countries”, National Seminar on Emerging Technologies & Applications ETA-2004, Saurashtra University, Rajkot, 25-26 Feb 2004, pp: 06


Suresh Jain


Nitin Upadhayay


Vilas Mahatme


Purnima Soni


Ekta R. Pashine
148. Ekta R. Pashine, Dr. R. V. Dharaskar, “Analysis of Text-To-Speech Implementation for Railway Time-Table System”, Bhilai Institute of Technology (Seth Balkrishan Memorial) Bhilai House, Durg Chhattisgarh, 10th Jan 2009


S. Lohi


M. Bhagwani


154. Manish H. Bhagwani, V. P. Mahatme, Dr. R. V. Dharaskar, “A Comparative Analysis of Test Sheet Generating Approaches For Multiple Assessment Criteria In E-Learning”, National Conference on "Emerging Trends in Communication & Information Technology (ETCIT-08), Amravati, Maharashtra, India, 19-20 Sept 2008


Apeksha V. Sakhare


M. K. Assudani


Khusbho S. Thakkar


B. V. Wakode


Nilesh M. Shelke

Doctor of Science DSc Degree in HCI - Research Contribution by Dr. Rajiv Dharaskar

https://www.researchgate.net/publication/324418523_Restricted_Domain_Natural_Language_Query_Processing_System


Smita R. Khond


U. S. Junghare


Pravin R. Futane


P. E. Ajmire

Rajashri. R. Shelke
174. R. R. Shelke, Dr. R. V. Dharaskar, Dr. V. M. Thakare, “Client-Side Mobile User’s Consumptive Behavior Based on Data Mining Techniques”, National Conference on Advances in Information and Communication Technology, Madhav Institute of Technology and Science, Gwalior, 28-29 October 2013, https://www.researchgate.net/publication/324506309_Client_Side_Mobile_Users_Consumptive_Behaviour_Based_on_Data_Mining_Techniques