# Preface

## OVERVIEW

Human computer interaction (HCI) evolved as a recognized discipline that attracts innovation and creativity. For the last 25 years, it inspired new solutions, especially for the benefit of the user as a human being, making the user the focal point that technology should serve rather than the other way around. The advent of the Internet, combined with the rapidly falling prices and increasing capability of personal computers, among other things, made the 1990s a period of very rapid change in technology. This has major implications on HCI research and advances, where peoples' demands and expectations as users of technology increased.

There is currently no agreement upon definition of the range of topics which form the area of human-computer interaction. Based on the definition given by the ACM Special Interest Group on Computer-Human Interaction Curriculum Development, which is also repeated in most HCI literature, the following is considered as an acceptable definition:

*Human-computer interaction is a discipline concerned with the design, evaluation and implementation of interactive computing systems for human use in a social context, and with the study of major phenomena surrounding them.*

A significant number of major corporations and academic institutions now study HCI. Many computer users today would argue that computer makers are still not paying enough attention to making their products "usable". HCI is undoubtedly a multi-disciplinary subject, which draws on disciplines such as psychology, cognitive science, ergonomics, sociology, engineering, business, graphic design, technical writing, and, most importantly, computer science and system design/software engineering.

As a discipline, HCI is relatively young. Throughout the history of civilization, technological innovations were motivated by fundamental human aspirations and by problems arising from human-computer interactions. Design, usability and interaction are recognised as the core issues in HCI.

Today, profound changes are taking place that touch all aspects of our society: changes in work, home, business, communication, science, technology, and engineering. These changes, as they involve humans, cannot but influence the future of HCI since they relate to how people interact with technology in an increasingly dynamic and complex world. This makes it even more essential for HCI to play a vital role in shaping the future.

Therefore, preparing an encyclopedia of HCI that can contribute to the further development of science and its applications, requires not only providing basic information on this subject, but also tackling problems

that involve HCI issues in a wider sense, for example, by addressing HCI in and for various applications, that is, e-learning, health informatics, and many others.

## CHALLENGES, CONTENT AND ORGANISATION

The following are some challenges in the HCI field, which were taken into consideration when compiling this encyclopedia:

- HCI is continually evolving with the fast change in technology and its cost. We, therefore, covered basic concepts/issues and also new advances in the field.
- The need to strike a balance between covering theory, methods/models, applications, experiences, and research. The balance was sought to provide a rich scientific and technical resource from different perspectives.
- The most important purpose of an encyclopedia in a particular discipline is to be a basic reference work for readers who need information on subjects in which they are not experts. The implication of "basic" is that an encyclopedia, while it should attempt to be comprehensive in *breadth* of coverage, cannot be comprehensive in the *depth* with which it treats most topics. What constitutes breadth of coverage is always a difficult question, and it is especially so for HCI, a relatively new discipline that has evolved over the past three decades and is still changing rapidly.
- An encyclopedia should, however, direct the reader to information at a deeper level, as this encyclopedia does through bibliographic references, indexed keywords, and so forth.
- This encyclopedia differs from other similar related references in that it covers core HCI topics/issues (that we see in most standard HCI books) as well as the use of HCI in various applications and recent advances and research. Thus the choice of specific topics for this encyclopedia has required our judgment of what is important. While there may be disagreement about the inclusion or exclusion of certain topics, we hope and believe that this selection is useful to a wide spectrum of readers. There are numerous articles that integrate the subject matter and put it into perspective. Overall, the encyclopedia is a general reference to HCI, its applications, and directions.

In order to meet these challenges, we invited professionals and researchers from many relevant fields and expertise to contribute. The resulting articles that appear in this volume were selected through a double-blind review process followed by rounds of revision prior to acceptance. Treatment of certain topics is not exclusive according to a given school or approach, and you will find a number of topics tackled from different perspectives with differing approaches. A field as dynamic as HCI will benefit from discussions, different opinions, and, wherever possible, a consensus.

An encyclopedia traditionally presents definitive articles that describe well-established and accepted concepts or events. While we have avoided the speculative extreme, this volume includes a number of entries that may be closer to the "experimental" end of the spectrum than the "well-established" end. The need to do so is driven by the dynamics of the discipline and the desire, not only to include the established, but also to provide a resource for those who are pursuing the experimental. Each author has provided a list of key terms and definitions deemed essential to the topic of his or her article. Rather than aggregate and filter these terms to produce a single "encyclopedic" definition, we have preferred instead to let the authors stand by their definition and allow each reader to interpret and understand each article according to the specific terminology used by its author(s).

Physically, the articles are printed in alphabetical order by their titles. This decision was made based on the overall requirements of Idea Group Reference's complete series of reference encyclopedias. The articles are varied, covering the following main themes: 1) Foundation (e.g., human, computer, interaction,

paradigms); 2) Design Process (e.g., design basics, design rules and guidelines, HCI in software development, implementation, evaluation, accessible design, user support); 3) Theories (e.g., cognitive models, social context and organisation, collaboration and group work, communication); 4) Analysis (e.g., task analysis, dialogue/interaction specification, modelling); and 5) HCI in various applications (e.g., e-learning, health informatics, multimedia, Web technology, ubiquitous computing, mobile computing).

This encyclopedia serves to inform practitioners, educators, students, researchers, and all who have an interest in the HCI field. Also, it is a useful resource for those not directly involved with HCI, but who want to understand some aspects of HCI in the domain they work in, for the benefit of "users". It may be used as a general reference, research reference, and also to support courses in education (undergraduate or postgraduate).

## CONCLUSION

Human computer interaction will continue to strongly influence technology and its use in our every day life. In order to help develop more "usable" technology that is "human/user-centred", we need to understand what HCI can offer on these fronts: theoretical, procedural, social, managerial, and technical.

The process of editing this encyclopedia and the interaction with international scholars have been most enjoyable. This book is truly an international endeavour. It includes 109 entries and contributions by internationally-talented authors from around the world, who brought invaluable insights, experiences, and expertise, with varied and most interesting cultural perspectives in HCI and its related disciplines.

It is my sincere hope that this volume serves not only as a reference to HCI professionals and researchers, but also as a resource for those working in various fields, where HCI can make significant contributions and improvements.

*Claude Ghaoui*
*Liverpool John Moores University, UK*