Relevance of Human-Centered Computing in the Contemporary World

Human-centered Computing (HCC) combines design principles with Computing to help develop computing systems that support human capabilities and cater to human needs. As India strives to achieve sustainable development goals, human-centered Computing becomes increasingly important in developing technology solutions that holistically support human activities in healthcare, education, women's safety, and others.

HCC, which is all about an interplay between human-centered design and computing solutions, will become an integral part of computing solutions for social developmental activities in the future. The aim is to create technology solutions at the center of the design process. As computing solutions are increasingly becoming a part of everyday life, e.g., mobile payment apps or essential apps like Arogya Setu, there is an increasing need for developing solutions that support the user without requiring the user to learn the technology.

As observed, during demonization, many people with low exposure to technology could not use mobile payment apps and net banking facilities; human-centered Computing addresses this challenge by providing design and research methods to develop computing systems that are easy to use and can be widely adopted.

Future Scope of HCC

Today, human dependence on computing solutions is no longer optional but an unavoidable necessity. How can one forget that public sector employees were not allowed to travel during the lockdown unless they had *Arogya Setu* installed on their mobile phones. Such practices have now almost become commonplace in most public and private institutions. To develop more innovative social-technical solutions in various domains, there is a pressing need to promote research activities in the HCC domain. Going forward, technology, for example, Artificial Intelligence (AI), will only become more prominent and impact almost every aspect of life or essential services like healthcare, travel, and education. The HCC will provide the necessary framework for developing intelligent solutions supporting human activities and enhancing human capability.

Which sectors does it impact, and how

The impact of HCC has been visible in almost every sector where Computing or technology has a direct interface with humans. Essentially, any technology solutions which interact with human users. From mobile apps or web-based solutions for reserving a seat in a bus to intelligent systems helping

doctors in analyzing health data or taking online classes is influenced by Human-Centered Computing.

With the increasing use of smartphones and the ever-increasing reach of the internet, new demographics are now using computers and the internet to get their work done. Experts of human-centered Computing believe that computer visualization, human-robot interaction, mixed reality systems, and mobile and ubiquitous computing, etc., will integrate HCC research for having a larger impact.

Role of students/researchers in the field

Most of the current-day technology solutions have been developed in the West (as per the needs of western users) and then are imported. However, we need to develop solutions that serve the needs of the diverse Indian population and specific Indian context. The students/researchers of HCC will help in creating knowledge and research methods to develop such solutions. The HCC education and research allow students/researchers to develop an understanding of how to engage with users, understand their requirements, develop solutions that meet the requirements, and evaluate them. Thus, developing robust and scalable solutions that are pluralistic and participatory in nature is the desired outcome of HCC research and training. Through addressing human priorities with a commitment to cross-disciplinary rigour, students make research contributions in core fields of computer science, such as human-computer interaction, computer graphics, visualisation, and interaction technologies.

Conclusion

HCC is a combination of human-computer interaction, design, and social sciences with the purpose to develop computing systems for humans in such a way that they support human endeavour without requiring efforts to learn and therefore help bridge the digital divide. With emerging AI applications, the need to provide inclusive, transparent, and explainable solutions will rise, the HCC knowledge research is rightly situated to address these requirements.