HUMAN-COMPUTER-INTERACTION AND MACHINE LEARNING

What is HCI?

HCI (Human Computer Interaction) refers to the evaluation of computer usability which influences how a common man uses a computer machine, and what is the relation between a person and a computer. The aim of HCI is to develop such a software which is easy to understand as well as easy to use for its end-user. HCI is all about perfectness and exactness of the interaction between human and computer which has to result in effective and preferable user feedback. One of the most important things that makes HCI persuasive is to capture the need of a user which makes him/her utilize the computer machine in an understandable and responsive way. Basically, HCI has no scope itself but has a great deal to gain from other domains, and has the potential to provide insight into human behavior in return.

For exploring a little deep about HCI, we shall discuss the components of HCI briefly. Later on, focusing on our domain i.e. Machine Learning, we shall go through the essential role that HCI plays in our domain.

HCI Components:

As the name implies, HCI comprises of three essential components namely the User, the Computer and their Interaction.

User:

The term "User" refers to an individual or a group of people working together. An appreciation of the way people's sensory systems (sight, hearing, touch) relay information is vital. Also, different users form different conceptions or and have

different ways of learning and keeping knowledge. In addition, cultural, political and national differences also play a part.

Computer:

When we talk about the computer, we're referring to any technology ranging from desktop computers, to large scale computer systems. For example, if we were discussing the design of a Website, then the Website itself would be referred to as "the computer". Devices such as mobile phones or VCRs can also be considered to be computers.

Interaction:

It is the relationship between a computer and a human to produce an effective output. This relationship follows a two- way process between a user and a computer machine. There are obvious differences between humans and machines. In spite of these, HCI attempts to ensure that they both get on with each other and interact successfully. In order to achieve a usable system, you need to apply what you know about humans and computers, and consult with likely users throughout the design process.

Role of HCI in Machine Learning:

Machine learning methods are being intensively developed and are actively being introduced into automated decision making. Therefore, there are multiple queries that have been arising time to time including, how do non-machine learning users interact with systems where similar algorithms are used? One of the important issues of this interaction, that how to make users trust model-based decisions? Therefore, with each passing year, the topic of interpreted machine learning and explainable artificial intelligence becomes more and more demanding.

For the implementation of HCI in machine learning models and artificial intelligence, there are many directions that lead to the design-based algorithms which apparently enhance the user interaction with the interpretation of machine learning. Comparison of the models in machine learning, their results, accuracies and summaries help in providing a definite path for the integration of HCI in data analysis. The analysis

includes constructing a causal graph between the variables and calculating a series of metrics that evaluate not only the accuracy but also the fairness of the model, which helps to find distortions in the predictions. All of this, when converted in graphs and visuals, could have an interactive impact for the users, thus providing essential Human-Computer-Interaction for making valuable decisions.

Conclusion:

The subject of this HCI area is the development of new methods for visualizing uncertainty in model predictions, creating systems for comparing analysis performed in different ways, and also analyzing the work of analysts with tools, for example, Jupyter Notebook, Tableau, etc.

References:

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Research By:

Salman Abdul Rahim

(Freelance Content Writer)