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Combining Model-Based and Data-Driven Methods in Human–Computer Interaction

Dear Colleagues,

The pervasiveness of modern computing systems, mainly based on embedded devices, has opened up the world of the human computer interface (HCI) to a set of different interaction methods (voice, text, classical GUIs, gestures, etc.). This richness of means by which humans can interact with machines is often enabled by artificial intelligence (AI), which is becoming more and more central in accessing complex computer-based systems. To this aim, the availability of a large quantity of data is critical in training and validating AI-based software.

Traditional software engineering methods oriented to the assurance of such properties are frequently based on models. In fact, model-based methods are crucial in modern HCIs. They allow designers to create accurate representations of user behavior, system dynamics, and contextual factors. By using models, designers can simulate interactions, predict user outcomes, and optimize interface design. These methods enhance usability, efficiency, and user satisfaction, leading to better HCI experiences. Other important non-functional features of HCIs are called to perform safety, privacy preservation, and fairness.

This Special Issue include, but are not limited to:

- Integration of model-based and data-driven methods for UI design in complex interactive systems;
- Leveraging machine and deep learning techniques to improve model-based HCI design and assurance;
- Utilizing data-driven approaches to enhance the accuracy and validity of model-based HCI predictions and simulations as well as model calibration.

Special Issue Website

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Special Issue