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International Journal of Research Publication and Reviews

Journal homepage: www.ijrpr.com ISSN 2582-7421

Human Machine Interface

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Abstract:

This paper presents Human Machine Interface, as a mediating artefact within the complex system to bridge automation/engine control is of importance for situation awareness, reliability, efficiency, effectiveness, resilience and safety. the aim of the thesis is to realize a comprehensive understanding of the complexity of Human Machine Interface in a very distributed complex system by exploring the experiences of the human agents during the designing and testing phases ofdesigned for purpose Human Machine Interface.

Keywords: Human Machine Interface, Brain Signal, Eye Gazed, Tangible.

I. INTRODUCTION

Human-machine interaction with industrial plants and other dynamic technical systems has nowadays been recognized as essential for process safety, quality, and efficiency. It comprises all aspects of interaction and communication between human users and their machines via human-machine interfaces. the full system of human users, the human-machine interface, and therefore the machine is that the so-called human-machine system The term “machine” indicates any reasonably dynamic technical system (or real-time application) including its automation and decision support equipment and software and it relates to several diverse application domains. The automation components of the technical system are denoted as supervision and control systems. They interact directly with the pure technical (production) process. samples of such processes are an influence generation process, a chemical or a discrete-parts production process, an aircraft, a tele-manipulator or a real-time software application. Human Machine Interface, as a mediating artefact within the complex system to bridge automation/engine control is of importance for situation awareness, reliability, efficiency, effectiveness, resilience and safety. the aim of the thesis is to realize a comprehensive understanding of the complexity of Human Machine Interface in a very distributed complex system by exploring the experiences of the human agents during the designing and testing phases of a designed for purpose Human Machine Interface.

II CHALLENGES

Seven Grand Challenges are identified and presented during this article: Human-Technology Symbiosis: Human- Environment Interactions; Ethics, Privacy and Security; Well-being, Health and Eudaimonia; Accessibility and Universal Access; Learning and Creativity; and scheme and Democracy. Although not exhaustive, they summarize the views and research priorities of a global interdisciplinary group of experts, reflecting different scientific perspectives, methodological approaches and application domains. Each identified Grand Challenge is analyzed in terms of: concept and problem definition; main research issues involved and state of the art; and associated emerging requirements.

This article presents the results of the collective effort of a bunch of 32 experts involved within the community of the Human Computer Interaction International Conference series. The group’s collaboration started in early 2018 with the gathering of opinions from all group members, each asked to independently list and describe five HCI grand challenges. During a one-day meeting continued the 20th July 2018 within the context of the HCI International 2018 Conference in urban center, USA, the identified topics were debated and challenges were formulated in terms of the impact of emerging intelligent interactive technologies on human life both at the individual and societal levels. Further analysis and consolidation led to a collection of seven Grand Challenges presented herein. This activity was organized and supported by the HCII Conference series.

III WORKING

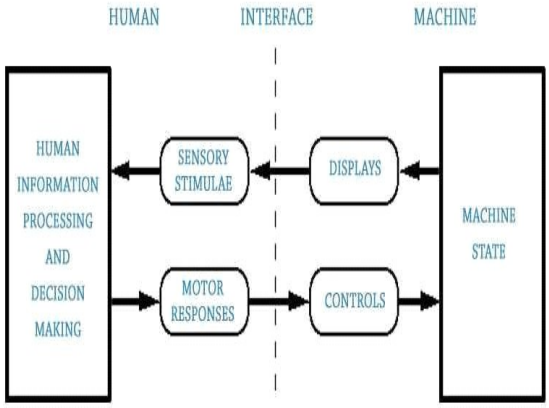

Figure shows Human machine interface with different human user classes which consists of, namely, operators, engineers, maintenance personnel, and managers. They have different but overlapping information needs.

The machine as an automatic system becomes more complex than one with less automation, resulting in more sophisticated structures of supervisory control. Higher complexity and more sophisticated control structures require a replacement quality of communication and co-operation between human and machine. The role of the human user shifts from that of a controller thereto of a supervisor. The human supervisor interacts with the method through one or several layers of computers on which the human- machine interface, the automation, and therefore the decision support functionalities are implemented. Thus, the functionalities of well-designed human-machine interaction have gained predominant importance in advanced process control as a consequence of the degree of automation and, also, of the rise of extended automation functionalities. The advanced technologies with extended functionalities include expert systems for control and diagnostics, fuzzy process control, and artificial neural networks in process control. it's important to confirm integration between conventional control systems and these advanced technologies for the aim of reaching the goals of efficient and safe systems performance yet as sustained and satisfying human performance. Matching the efforts of automation and of human factors issues ends up in the approach of human-centered automation, recommended by many researchers for quite while.

ADVANTAGES

- Higher Worker Satisfaction.
- Operation Control Becomes More Flexible.
- User-Friendliness.
- Enhance data saving and recording.
- Higher Productivity.

APPLICATION

- Automotive Dashboards.
- Equipment/Machinery Monitoring.
- Electronic Displays.
- Building Automation.
- Audio/Video Production.

CONCLUSION

The focus of the study is to handle the emerging issues during the mixing of human and technologies during a wider scope rather than anchoring to the heuristic of “human observer –interface artefact”. Thus the look can truly support human agents to dynamically adapt to the variability and contingencies in an exceedingly complex system. this might be considered as a process of thinking out of the normal dualism box of HMI concept during which the assumption is interface and human are isolated entities, despite the actual fact that different HMI designs could significantly influence the performance and skill of somebody's operator. during this study, investigations about how the distributed properties of the system could influence HMI design, so as to explore what composes a reliable decision support. HMI to facilitate human element for problem solving. Experiences from the MUNIN project regarding remote supervisory operations towards the controlling of unmanned autonomous vessels provides an example of an HMI structure and a contextual background to delve into the look explored during this this is By systematizing the centralized situation aboard from the sociotechnical system perspective as a place to begin, it suggests that maintaining high level of SA could become an unprecedented challenge for HMI design utilized in MUNIN, such a highly automated distributed context. While the power to quickly verify and validate information regarding the

automated process is taken into account because the necessary means to stay in-the-loop and achieve higher levels of SA during a centralized HAS, the shortage of the presence in device environment hugely constrains an operator's perceptual channel and consequently degrade his adaptive capabilities.

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