THE INCLUSION OF HUMAN EXPERIENCE IN ARTIFICIALLY INTELLIGENT SYSTEMS

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ABSTRACT

In this exploration, we consider relevant tenets of process design, both general and in specialized industries, as well as a myriad of concepts for experience transfer and other types of reasoning that serve as the foundation for decision-making. Altogether, these make up a set of relevant explorations to support the development of an efficient and effective method for including human experience in artificially intelligent systems.

Keywords: *Experience Transfer, Process Design, Artificial Intelligence*

1. INTRODUCTION

According to Gray and Suri (2017)., the paradox of automation's "last mile" is the continuous uptick in temporary markets for new types of "human-in-the-loop" interactions. Said another way, as we get closer to a fully automated process, especially those with artificially intelligent foundations, there are more instances in which a human must be somewhere in the process in order for the implementation to have a successful outcome. For this and other reasons, researchers continue to investigate ways to ensure that artificially intelligent systems incorporate considerations of the full human experience.

As the development methodology and functional capacity of artificially intelligent systems improves, process designers and software engineers are taking into consideration the inclusion of human experience when architecting such systems.

Challenges in transferring the knowledge of humans into artificially intelligent systems span acquisition, reuse, constraints on creativity and the tendency to "start from scratch" effectively neglecting previously solved problems (Reyes et. al., 2015). In this exploration, we consider relevant tenets of process design, both general and in specialized industries. Additionally, we review concepts of experience transfer and other types of reasoning that make up the framework of decision-making as it is coded into artificially intelligent systems.

2. LITERATURE REVIEW

2.1 Process Design
2.1.1 General
When implementing the successful transfer of human experience to artificially intelligent systems, strong consideration must be given to the design of processes. Knowledge-based systems can be helpful in designing processes (Reyes et. al., 2015) and the conversion of raw data into a useful information product upon which a system can base a decision is the concept of process engineering.

One reason for attempting the transfer of human experience is to reduce failures and non-productive time in the system (Skalle et. al., 2013) and to build a mechanism for the system to both determine the cause of failures that remain as well as the appropriate repairs to implement.

A well-functioning artificially intelligent system can even identify the problem symptoms by using this human experience input. However, the influx of multi-source data makes this advanced functionality difficult (Gundersen et. al., 2013) and yet an iterative process to create pattern matching agents can support the improvement of system comprehension. For instance, some artificially intelligent precision