

## INTELLIGENT INTERACTION FOR SMART WORK

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### ABSTRACT

*A lot of sources are available to every side of human environment. These sources are genuinely provided by nature to us. The utilization of these available sources again and again results in “re-source” for us. The interaction among multiple resources increases the level of availability for maximum possible duration to the environment. The involvement of both (natural & artificial) intelligence create interaction environment which works every time and everywhere. The quality work done bounded with time for impactful effect is known as “smart work”. The theme and framework are required for creating an environment for smart work. In this article we propose a theorem for theme declaration which is based on suggested lemma. The theme declaration is measured in probabilistic terms. To perform work in smart fashion we require the appropriate proportion of both intelligence (natural and human) and their interaction. We have also cited three varied examples discussing the relevance of intelligent interaction for smart work.*

### KEYWORDS

*Intelligence, Interaction, Smart work, Natural Intelligence, Human Intelligence, Resources*

## 1. INTRODUCTION

### 1.1. Natural Resources

**Resources:** Any resource i.e. money, materials, staff, services, or any type of asset which produces benefit for the user. A resource may be partially or fully consumed in the process. Resources can be classified as natural or artificial (or man-made) resources. A natural resource is directly obtained from the environment to satisfy human needs and wants. E.g. sand  
An artificial resource is synthesised from natural resources to satisfy requirements of applications. E.g. Glass

### 1.2. Human Manufactured Resources

**Man Made Resource:** It is a resource made by mankind by using natural resources for their needs.

**Intelligence:** A mental ability involved in reasoning, perceiving relationships and analogies, calculating, learning quickly etc. In other words intelligence can be defined as “**what you do when you don’t know what to do**”. The level of our intelligence determines how well we cope with changes in our environment. Intelligence is beyond the human brain. Consequently it does not require form to provide a specific physical facility, such as brain, for it to be present and to function. It only requires that there be a focal point (the whole form itself) through which its intelligence may flow.[3]

**Artificial:** It is something which does not come directly from natural resources; it is developed by human.

**Artificial intelligence:** It is a methodology of making computers to act like a human when some job requires intelligence. It is a method of solving problems through human-made neural networks where human intelligence is required. It is an attempt to develop a model which acts like a human.

**Expert systems:** On the basis of human reasoning, the computer program designed for automated work is known as an expert system. An expert system is a computer program comprising a set of rules to encapsulate knowledge about a particular problem domain. These rules follow the concepts of artificial intelligence and perform actions based on certain predefined analytical conditions to generate a desired set of output.

**Rule based System:** The knowledge required in an expert system is derived from a rule-based system. It delineates the expert system to the knowledge base. Rules may be modified as per program behaviour without affecting the system shell. The expert system shell can implement a varied set of rules to many distinct domains and is capable of storing huge knowledge as compared to humans.

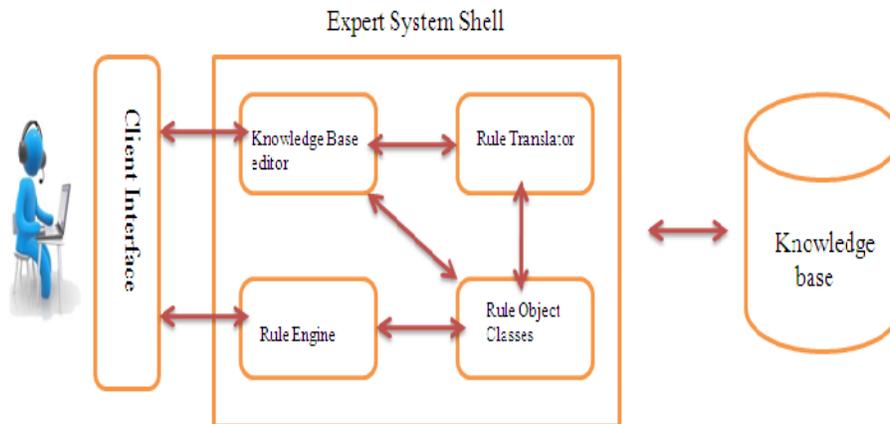


Fig.1: Architecture of Expert system

### Client Interface

The Client Interface processes are designed for easy inferring the application request to the expert system from client side.

### Knowledge Base Editor

The expert editor composes or adds the rules for knowledge base using the knowledge base editor.

### Rule Translator

The interpreter to convert human understandable rules into a form understandable by Rule Engine and vice-versa is known as Rule Translator.

**Rule Engine**

To execute the expert’s thought we require Rule Engine. It interprets and designs class of programs using rules derived from knowledge base to facilitate work automation.

**Rule Object Classes**

Rule Object Classes acts as a framework for object classes providing features for rule editing, construction of metadata and various knowledge-base operations.

**2. THEME AND FRAMEWORK FOR INTELLIGENT INTERACTION**

The theme declaration is based on the phenomenon to control the work station and the processing stage of individual components. The declaration ratio is directly proportional to the work load. Intelligent interaction propose three types of themes:- High , Medium and low. Consequently these are represented as H, M and L in work station. The maximization of working shows high level of theme declaration.

Table1: Theme declaration category

S No	Theme Type	Declaration (probability)	Applications
1.	High(H)	0.71 to 1.0	More complicated and complex area for interaction to the system.
2.	Medium(M)	0.36 to 0.70	Average interaction to the system
3.	Low(L)	0.0 to 0.35	Simplified interaction to the system

**Lemma 1:** Theme measurement = Prob. [(No. of internal components and their applications + No. of services) / Time duration for services]

**Lemma 2:** The probability of reliability, portability and usability affect the theme declaration. To maximize these applications, theme will follow H and M declaration.

**Theorem:** The theme declaration can be defined from the combined probability of above cited Lemma L1 & L2. The theme declaration ( $t_d$ )\

$$t_d = \{L1, L2\} \dots\dots\dots (i)$$



Fig.2 Framework for Intelligent work station

To manage proper operation of the system, interaction framework is required to intelligent environment. This framework clarifies the graphical representation of individual entities interact into the system. They have their well defined definitions and situations for work station. The identification of each individual entity is characterised in a well defined manner through their framework.

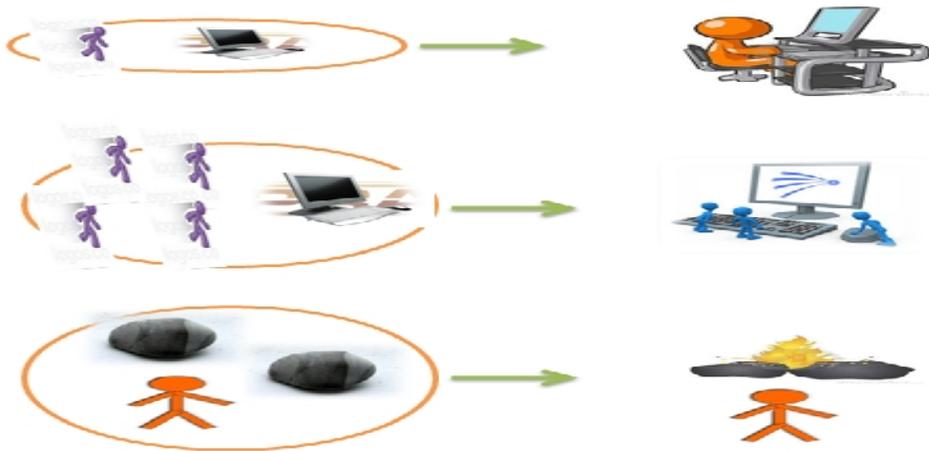


Fig.3 Framework for Intelligent work station

The framework of Intelligent Interaction for Smart work is designed with the consideration of:-

- 1) Portability
- 2) Availability & Reliability
- 3) Maintainability
- 4) Usability

### 3. SMART WORK

#### 3.1. Advanced Equipments

To accomplish smart work for any type of jobs, we require systems working as per human being intelligence and control each task of jobs through natural intelligence. Few common types of equipment (e.g. automated controller, embedded system, projector, recorder etc.) are used in various applications of smart work. The benefits after using such advanced equipments are cited as under:-

Reduce labour work: Additional human effort is reduced to minimize the human error.

Use machinery system for automated work: the automation of work makes sufficient effort for cost and time saving and guarantees quality of service.

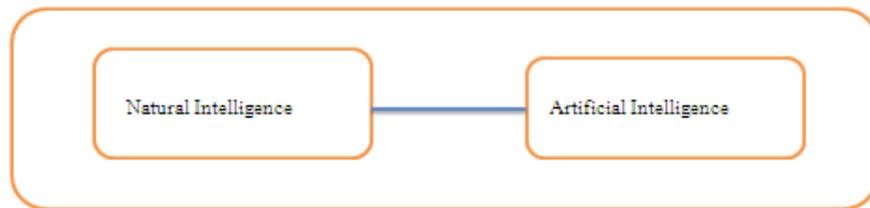


Fig.4: Advanced Equipments for Smart work

Avoid the maximum applicability of natural resources through involvement of human being resources. All stages of automated machinery systems (human being intelligence) are inspected by person or team (natural intelligence). These inspections guarantee the authenticity of work.

Combinations of natural and human being resources in proper proportions depending on desired outcome: Depending on the application or task requirements, a proper blend of natural as well as human being intelligence needs to be used. For example, in a robotics system 80-90% of human being intelligence with 10-20% natural intelligence is combined to control the task.

#### 3.2. Partial Interaction to Natural and Human Intelligence

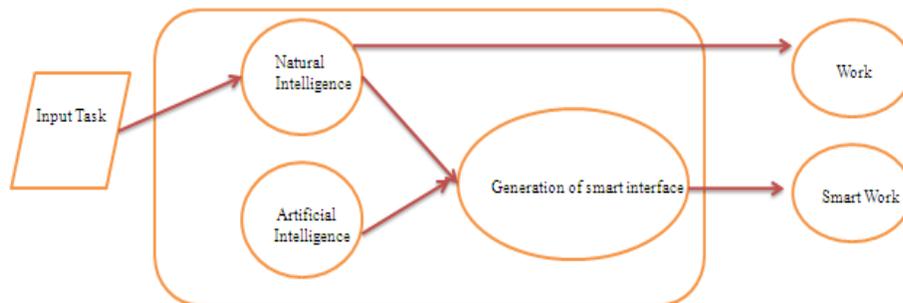


Fig.5: Partial interaction of intelligence

The input task can be processed to completion in two ways:-

- i) Naturally
- ii) Smartly

The Natural way proposes a simplified approach towards task completion using available natural resources as well as intelligence.

On the other hand when the work is accomplished using a perfect blend of natural and artificial intelligence with the help of a proper framework or interface then the final outcome is more qualitative and optimal.

## 4. EXAMPLES

### 4.1. Screen Recorder

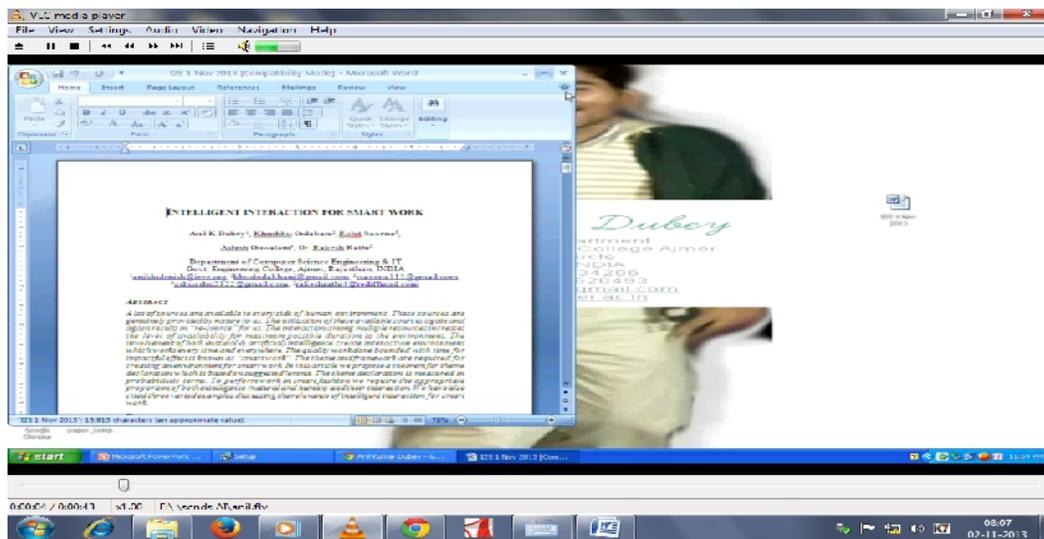


Fig. 6: Screen Recorder Interface

Unique tool designed for recording screen movements to enable recorded task for distribution to multiple sites or applications.

### 4.2. Smart Interaction of Robotics in Medical

A robot is a mechanical or virtual agent, usually an electro-mechanical machine that is guided by a computer program or electronic circuitry.



Fig. 7: Smart interaction of Robotics in medical [4]

Robotics supplements medical science by two main functionalities: One is to act as individual and other being to work as an entire system.

#### 4.3. X-box 360

The Xbox 360 is the video game console developed by Microsoft and as the successor to the Xbox. It can also be used to play back media using Windows Media Center.



Fig. 8: Xbox 360

Various accessories are available for the console including wired and wireless controllers, headsets for chatting, a webcam for video chatting, dance mats, faceplates for customization and Gamercize for exercise etc. Applications include - gaming, interfacing, multimedia etc. [5]

## 5. CONCLUSIONS

The day to day technological application captured intelligence in their work applications. This intelligence is incomplete in the absence of combinations of intelligence interaction entities. Due to the growable topic of interaction application into the environment authors are identifying and choose this appropriate area of research. We distinguished the intelligence on the basis of resources and gave the characteristics of each one. As we know that natural intelligence occurred from natural resources and human being intelligence is found from the modification in natural resources. After two or three levels modification natural intelligence becomes human being or artificial intelligence. As intelligence platform require its theme and framework model to control their operations in a system environment. We declare three types of theme on the basis of their work applications i.e. High (H), Medium (M) and Low (L). The created framework is operated in a problem environment to make the smart work for solving the problems. The advanced equipments of smart work and combinations of partial interaction to the intelligent environment are represented in graphical manner. Four cases are given in the article as an example of smart work to control the operation in the created framework. Finally authors concluded this work and propose future perspective to do in this area.

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