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ANALYZING LEVELS OF AMBIENT INTELLIGENCE PARADIGM IN HUMAN COMPUTER INTERACTION FOR BETTER BEHAVIOUR AND PERFORMANCE OF THE USER

Humera Anjum¹ & Dr. Pankaj Kawadkar²

Humare Anjum , a research scholar at CSE department at SSSUTMS, Sehore

Dr. Pankaj Kawadkar, Professor at CSE department at SSSUTMS,Sehore

Abstract:

Ambient Intelligence is novel multidisciplinary worldview will alter the connection among people, innovation by climate they animate in. This worldview is underlying foundations by thoughts Omnipresent and Universal processing. In this visualization, that these days is nearly reality, innovation gets inescapable in regular day to day existences yet, regardless of its expanding significance, it (should) becomes "imperceptible", so profoundly interweaved in our everyday exercises to vanish the texture of our exists. The novel climate ought to developed "shrewd" and "savvy", ready to effectively and adaptively respond to the attendance, activities and necessities of people (clients as well as perplexing person), so as to help day by day exercises and improve the personal satisfaction. Surrounding Intelligence speaks to a pattern ready to significantly influence each part of our life. It's anything but an issue in regards to just innovation yet is about another approach to be "human", to occupy our current circumstance, and to discourse with innovation. Yet, what makes a climate brilliant and canny is the manner in which it comprehends and responds to evolving conditions. As a very much planned instrument can assist us with completing our exercises all the more rapidly and effectively, an inadequately planned one could be an obstruction. Surrounding Intelligence worldview will in general change some human's exercises via robotizing certain undertaking. Anyway, isn't generally easy to choose what robotize and when and how much the client needs to have control.

Keywords: Artificial intelligence, AMI, Sensors, IoT, Decision making

1 Introduction

Ambient Intelligence is novel multidisciplinary example will alter the association among individuals, expertise and nature they live in. This exampleis foundations in the considerations Universal and Inescapable enlisting. In this visualization, that currently is practically authenticity, expertise winds up certain in customary day by day presences regardless, despite its growing hugeness, it (should) advances toward getting to be "imperceptible", so significantly weaved in our regular actions to vanish by surface of our exists. The novel condition must end up "sharp" and "savvy", prepared to successfully and misleadingly respond to the closeness, exercises and necessities

of individuals (customers and additionally perplexing individual), in order to help each day activities and improve the personal satisfaction. Ambient Intelligence addresses an example prepared to essentially impact each piece of our life. It's definitely not an issue concerning just technology anyway is about another way to deal with be "human", to involve our condition, and to talk by technology. Regardless, what makes a domain keen and astute is the manner in which it fathoms and responds to developing circumstances. As a particularly laid out gadget can empower us to finish our activities more quickly and adequately, an ineffectually formed one may impeditment. Ambient Intelligence exampleinclines to alteraboutindividual'sactions through mechanizingconfidentjob. At any rate isn't by and large modest to pick what industrialize and after and how much the customer needs switch.

The constant developing technology is recently conveyed an a lot of novel gadgets and relapsed enlisting controlhooked onnumerous parts of our regular existences; it is in like manner pouring a change on how humanitynarrates to Computer Science. The downsizing procedure in contraptions has formally completed open a broad assortment of embedded enlisting gadgets which would now have the capacity to assistance us once we rinse pieces of clothing and dishes, cook our meals, and ambition our automobiles. Charged by those productive requests mechanical advancements, as Radio-Frequency Identification (RFID) technology secondhand to recognize, find and path marked things or people, in suggestionby singular domain interactingprocedures may engage specialists to pass on inescapable handling to all parts of our lives. These investigation advancements are immediately abused by overall undertakings, see for instance, complete the method of data trade, propelling 'globalization' of technology.

In this work, then afterward a dissection of the encompassing sagacity paradigm, from claiming its hypothetical and innovative unrest enablers and of its overall meanings identified with human workstation Communication, concentrates by issue about conclusion the good level from claiming mechanization (LOA), over a encompassing brainpower situation that is truly ready to enable those last client. Similarly, as those secondary intricacy from claiming examining those different contexts.

1.1 INTERNET OF THINGS

The Internet of Things (IoT) paradigm suggests the arranged interconnection of consistent things, which are as often as possible outfitted with inescapable intelligence. IoT will provoke a significantly scattered system of giving gadgets. By virtue of speedy advances in basic developments, IoT is opening huge open entryways for innumerable applications that assurance to improve the nature of our lives. IoT is related with the accompanying ideas in data and communication technology:

Ubiquitous communication: the general capacity of items to convey (anyplace and whenever), it is the procedure by which communications between numerous operators can happen at the same time and without the confinements of time.

1.2 AMBIENT INTELLIGENCE

Ambient intelligence is a creating request that passes on aptitude to our standard surroundings and kindsthis condition fragile to us. Ambient intelligence (AmI) ask about develops developments in sensors and sensor systems, inevitable figuring, and man-made intellectual competence. Since these contributing fields hasqualifiedmarvelous advancement over the latest couple of years, AmI investigate has sustained and broadened. Since AmI explore is building up, the ensuing advancements certification to revolutionaries consistently human life by making people's surroundings versatile and flexible .

Systems, Sensors, Human Computer Interfaces (HCI), UniversalPervasive Computing and Artificial Intelligence (AI) are generally pertinent and consistent yet nobody of them dexterously protectants the full degree of AmI. Ambient Intelligence collects each one of these advantages for give versatile and quick organizations to clients acting in their surroundings. AmI is agreed with the possibility of the vanishing PC": "The most huge advancements are those that vanish. They work themselves into the surface of customary everyday presence until the point when the moment that they are misty from it." The vanishing PC is particularly associated with the possibility of Ubiquitous Computing, or Pervasive Computing, a name generated by IBM, or all the more starting late each item. These definitions underscore the physical closeness of structures and openness of benefits anyway miss a key part: the express need of Intelligence, the introduce of AI. AI is used as a piece of a wide sense, fusing

zones like administrator based programming and mechanical technology. What has any kind of effect is that AmI systems give elasticity, alteration, desire and a practical interface in light of an authentic worry for clients. In order to be sensible, a system must be keen. That is the way a readied associate, e.g. a therapeutic specialist or individual associate, routinely continues; proactively helping when required anyway honing restriction if critical. Being sensible solicitations seeing the client, educating or significant her/his tendencies and the ability to demonstrate sensitivity for the client's perspective and presentcondition. In spite of the way that the term Ambient Intelligence is utilized as a piece of that article to delineate this area of research in Europe, the peruser must realize that equivalent advancements on USA and Canada are by and large insinuated as Smart Environments or Intelligent Environments. We hold the European classification as it underscores the intelligence factor of these structures as contrasting to the physical framework .

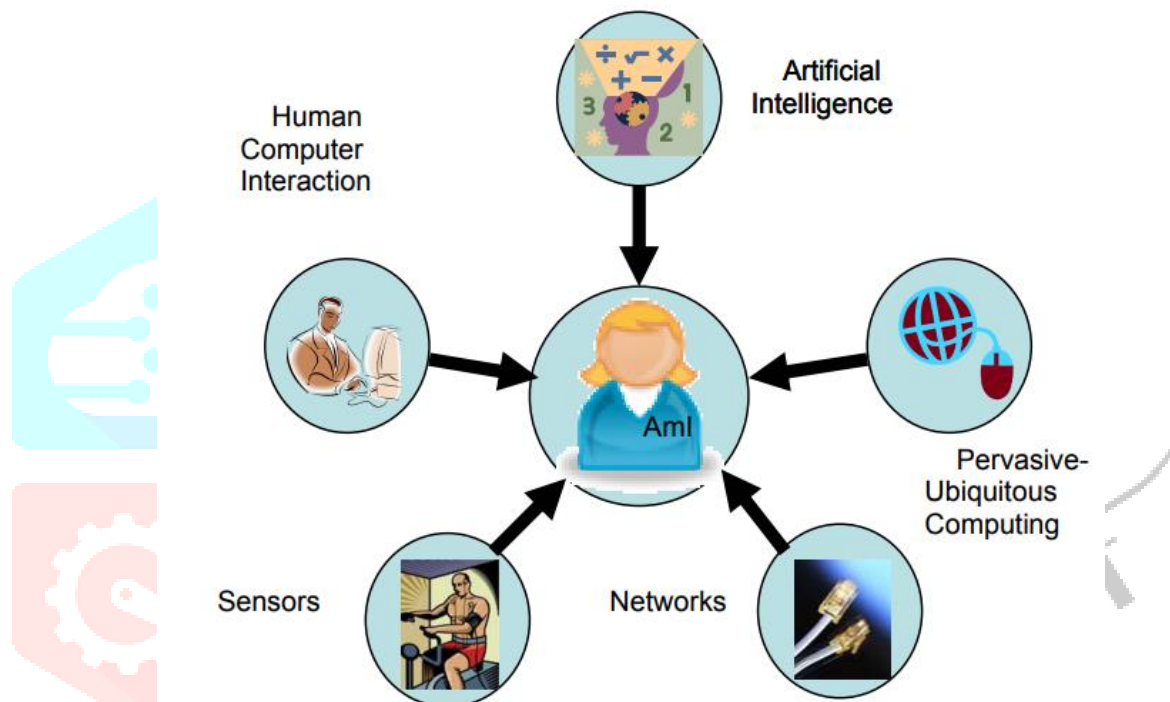


Figure 1: Relative in among AmI and other areas in Computing Science

1.3 ADDED ENVIRONMENTS AND APPLICATIONS FOR AMI

Distinctive applications are similarly down to earth and imperative and the usage of sensors and shrewd gadgets are found in: Health-related applications. Doctor's facilities can construct the adequacy of their organizations by watching patients' wellbeing and development by performing customized examination of happenings in their rooms. They can moreover assemble security and reduction cross-sullyng by, for instance, simply empowering affirmed staff and patients to get to precise locales and gadgets.

Open transportation division: Effective stream of activity can profit by extra technology including Worldwide Position Satellite (GPS) - based spatial territory estimation (recognized as 'sat-nav') to make transport more well-known and in this manner more compelling and safer. Clearly this approach similarly supports vehicle following, raising chance of improvement and security problems in the local. Without a doubt satellite after May at last shape the start of stop up charging and road esteeming. At show this is proficient in limited zones by means of cameras and vehicle conspicuous proof with picture getting ready programming. London has driven the world around there with a £10 billion, five-year hypothesis program. As the ambient technology drives by satellite after structures fitted to all cars, various overfilled urban territories may take after the London show, anyway deprived of the enormous framework wander. Modernized label ID for auto charge portion and speed confinements is a bit of the present transport condition, identified by a frequently extending system of roadside cameras.

Education administrations: Universities and propelled instruction foundations use shrewd card technology to enable access to enrolling and library offices, auto parks, devouring passages and address rooms. A comparable technology may be used to screen investment, and track understudies' development on their segments,

Crisis administrations: Safety-related organizations like protect vehicle and fire separations can upgrade their response time to a scene by exact GPS based region and by helping the course by means of motorizing activity movements to help them. The correctional facility and police organization can quickly discover a place where a hazard is going on and design improved admittance to it for safety staff .

Production-situated spots: Safety-related organizations like protect vehicle and fire separations can upgrade their reaction time to a scene by exact GPS based region and by helping the course by means of motorizing activity movements to help them. The correctional facility and police organization can quickly discover a place where a hazard is going on and design better access to it for security staff.

Open Surveillance: The across the board game plan of CCTV cameras gives checking of perhaps risky open spots. Downtown regions, underground stations and open transport would all have the capacity to profit for extended perception. Starting not very far in the past this was an absolutely uninvolved process, as often as possible used to amass proof of wrong-doing, yet obliged similar to bad behavior shirking. As video ends up being normally destitute down and deciphered by PC this will extend Aml to the more responsible option.

1.4 OBJECTIVES

1. To analyze the different levels composing the Ambient Intelligence paradigm
2. To troubleshoot the problems associated the Human Factors and the Human Computer Interaction
3. To improved comprehend in what way to alter the presentation and the performance of the use
4. To analyze the working of smart surveillance.
- 5.

2 PROBLEM STATEMENT

Ambient Intelligence addresses an example prepared to fundamentally impact each piece of our life. It's definitely not an issue concerning just technology anyway is about another way to deal with be "human", to involve our condition, and to talk by technology. Nevertheless, what makes a domain savvy and watchful is the manner in which it grasps and reacts to advancing circumstances. As an inside and out delineated instrument can empower us to finish our activities more quickly and easily, a efficiently formed one could be an obstacle. Ambient Intelligence paradigm tends to change some human's activities by means of automating certain task. At any rate isn't for the most part simple to pick what modernize and when and how much the client needs control. In this work, after an examination of the Ambient Intelligence paradigm, of its speculative and imaginative enabling impacts and of its general consequences related to Human PC Communication, bases on the issue of finding the right level of robotization (LOA), in an Ambient Intelligence circumstance that is to a great degree prepared to draw in the last client. As the high unconventionality of separating the unmistakable settings in which the Ambient Intelligence could be associated we based on a specific circumstance: brilliant observation. We carried on our work endeavoring to contact all the basic levels of an Ambient Intelligence system.

2 Literature Survey

J.C. Augusto and D. Shapiro, (2007) in their examination communicated that the predictable development in skill recently made a lot of new gadgets and relapsed handling influence on various parts of our regular everyday existences; it is in like manner heavy a change on in what way civilization relates to Software engineering. The downsizing procedure in equipment has officially ended available a broad assortment of embedded enlisting gadgets that would now have the capacity to help us when we wash articles of clothing and dishes, cook our meals, and drive our automobiles. Energized by those effective applications inventive advancements, as radio frequency identification (RFID) technology, that recognize, find and track marked things or people, in connotation by singular district interacting procedures may enable impacts to pass on inescapable enrolling to all parts of our lives. These examination advancements are immediately mishandled by overall undertakings, here instance, concluded the strategy of data trade, propelling 'globalization' of technology.

ST Advisory Group (2010) investigated that Ambient Intelligence (AmI) is rising speedy as a multi-disciplinary theme of attention by empower various zones of investigation has critical profitable effect by general public. The undeveloped awareness overdue AmI by enhancing a situation by skill (generally sensors and gadgets interconnected through a system), a structure can be attempted to take +results to profit the clients of that condition in light of constant evidence met and chronicled data gathered. AmI procures parts of various related areas of Software engineering.

M. Weiser (2011) in his investigation inspected that Systems, Sensors, Human PC Interfaces (HCI), Inescapable Omnipresent Registering and Man-made brainpower (AI) are in general applicable and consistent anyway nobody of them hypothetically protections the full degree of AmI. Ambient Intelligence collects each one of these resources for give versatile and clever organizations to clients acting in their surroundings. AmI is agreed with the possibility of the vanishing PC: "The most critical developments are those that vanish. They work themselves into the surface of customary day by day presence until the point that they are unclear from it."

D. Saha and A. Mukherjee (2013) inquired about that the vanishing PC is clearly associated with the possibility of Ubiquitous Registering, or Unavoidable Processing, a name initiated by IBM, or all the more starting late Every ware. These descriptions underline the corporal proximity of schemes and obtainability of advantages yet failure a key segment: the unequivocal need of Intelligence, the commence of AI. AI is used as a piece of a wide sense, including zones like administrator based programming and mechanical self-sufficiency. What is critical is that AmI structures give versatility, modification, desire and a sensible interface in light of a real worry for clients. Now we develop Raffler's meaning to underscore Intelligence as an essential part of an AmI structure: "A computerized situation that proactively, yet sensibly, supports people in their step by step lives."

Saunders and Gero, (2011) communicated that Innovativeness in computerized reasoning was concentrated to fathom imagination better all things considered. What can be found creative to individuals may be interpreted contrastingly by counterfeit social requests, in view of the particular measures that happen inside individually zone. To variety a computational prototype for fake creative ability, convinced necessities essential be met. The prototype comprises a general public of masters organized in a social situation. Here is no administrator that can organize the direct of the different pros. Here are no rules in the experts or condition that immediate overall lead. Authorities connect with various administrators to exchange collectibles and appraisals. Administrators connect with nature to get to social pictures. Pros evaluate the ingenuity and antiquated rarities of various administrators.

Azitiria, Izaguirre and Augusto (2010) analyzed that for a machine to grasp and adequately see outlines, the parts of an ambient sharp condition anticipated that would source the earth by aptitude is completed. These sorts of classifications join recognizing, considering and substitute. Identifying is isolated hooked on two regions of emphasis: "checking of the client and his/her activities and seeing of nature itself" by the usage of development sensors, watching the client and what he/she does is fundamental to track and recognize them. As for the earth, sensors help aggregate data in perspective of the infection, measure of light and moistness of the earth, serving the mechanism consider the client additional.

Alam, M. R., Reaz, M. B. I., and Ali, M. A. M (2012) expressed that with the approach of the Web of Things and inescapable preparing, purchasers are asking for all the additionally enamoring client experiences. Ambient intelligence investigate portrays a fantasy of gadgets clearly organized by life to empower people to accomplish their destinations by means of helpful data. Such targets are essential, to improve client relief, e.g. by setting off the essential warming impartial earlier you reach home, or multifaceted, for instance, e-preparing to eat improved and continue with a more advantageous existence. These favorable circumstances are valuable for the client, and additionally for nature, as keen structures to lessen their ecological influence and sewer on possessions. Ambient intelligence can in like manner profit friends and family, by giving huge quietness in-home medicinal services organizations. Present paper explores an Ambient Intelligence tells to the home and moreover probable buyer applications.

Sadri, F. (2011) investigated in their examination that a receptive situation is one that identifies the proceedings occurring in it and responds to these proceedings by one means or another. This responsiveness can be refined in an extensive variety of courses, from sweeping PC appears, to Cell phone alerts and wearable technology. A part of the more joined advances incorporates wearable projectors, for instance, the AMP-D wearable unavoidable show. We will look at late associated work that tells to this point as the topic of a written work study.

Kim et. Al. (2013) in their examination investigated that Sensors are by and by ratty and unavoidable, quickly accessible off the-rack and typically originate privileged the home. Lara et al. implies the possibility of omnipresent distinguishing that is stressed over expelling data since data learned by unpreventable sensors. Kim et al. ensure the present facial affirmation structure to be high precision rates. The issue is never again by social occasion data by the client's condition, anyway about disentangling it. Cook presents one of the essential contests in Ambient Intelligence at this moment, which is that at introduce most clients need to form oversees by hand to understand sensor data and control gadgets. As the sum and multifaceted nature of embedded gadgets grow quickly end up being too much badly arranged, making it difficult to keep up and organize in this manual way.

Rashidi et. Al. (2013) proposes that additional work on assistive robots and their affirmation rates by ageing ought to be driven. This is attested by Fernandez et al. who observes that ageing affected role don't find standard systems, for instance, Cell phone applications easy to use.

3 Proposed System

The structure is made out of an entirety of 4 programming requests that, helpfully, let the anchoring of data by sensors and their meeting by combination figuring's with a particular ultimate objective to create events and alerts that can be administered from a director's workstation. The structure's outline is scattered, the required limits where realized in a confined and independent course, to defend flexibility and assurance adaptability. Correspondence among the assorted modules is sure by an conversation of messages. Here two choices let working in a Multilanguage and multi-arrange condition. To the extent the engineering of the framework is concerned, the past works were considered, which permitted portraying a stratified framework predictable of 3 levels:

Sources: this layer incorporates the procurement of crude information by sensors, and the product for the ensuing preparing.

Synthesis: in this level the approaching information are combined by expectation calculations, permitting affiliations. Contingent upon the affiliations acquired, alerts or flags are produced. In this level of information gathering information are likewise put away to database permitting post-hoc investigation.

Visualization: all framework customers have a place with this level. Customers could be of different kinds, since keen surveillance frameworks to expanded certainty.

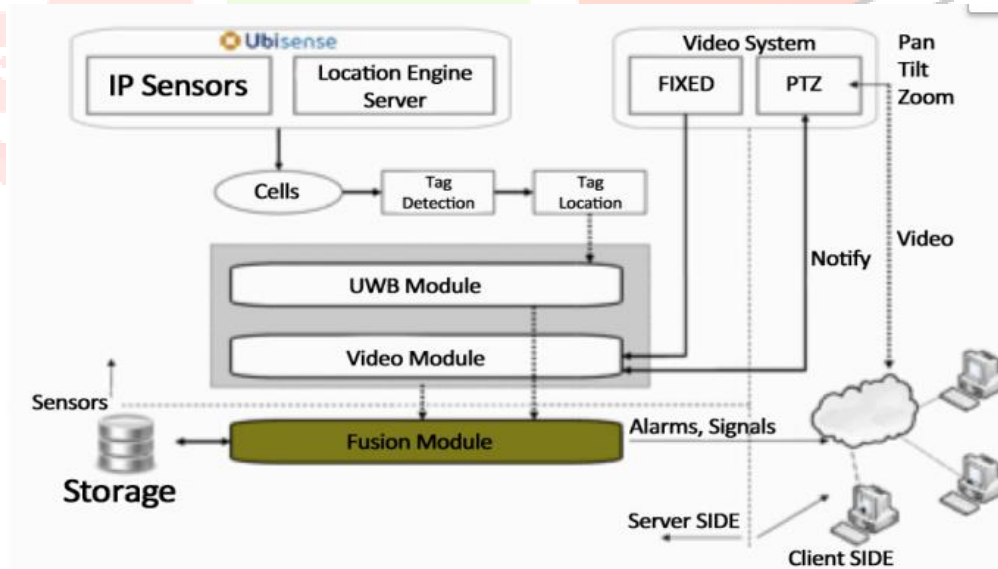


Figure 2: System architecture

In this investigation, we will display a coordinated structure envisioned for ambient intelligence applications anywhere indoor zones necessity be below regulator of a human administrator. The system will have the ability to movement to pathway persons and recognize distinctive proceedings (i.e. journey point of a practical fence) on account of the combination of data directed by 2 free sources, to be particular, a UWB-RFID restriction component and a PC visualization module

Tests

Test movement have been endeavored to checked the likelihood of modified relationship of bearings saw by the two subsystems and the steady nature of anomalous state data got. This limit can be seen as a fundamental ability to collect complex structures like video-reconnaissance o ambient intelligence applications. In this stage the discovering exactness isn't surveyed, it will be focus of additional examinations. Tests will continue running inside the Ambient Intelligence Research facility at Sardegna Ricerche (Sardinia, Italy), anywhere the structure is starting at now being chipped away at.

Tests will be attracted up to check:

- Bias
- Distance among the directions accomplished by the 2 subsystems;
- Identical of directions accomplished by the 2 subsystems in various conditions;
- Journey location of a practicalrailing;

DATA ANALYSIS

In this investigation, we will display a coordinated structure envisioned for ambient intelligence submissionsanywhere indoor zones must be belowcontroller of a human administrator. The system will have the ability to movement to track people and recognize distinctive events (i.e. crossing point of a virtual fence) on account of the combination of data sent by two free sources, to be particular, a UWB-RFID restriction module and a PC vision module.

4 Results

Those accomplishment rate for executing those undertaking might have been 85%. Those issues happened basically when those clients must switch over separate feature encourages on take after somebody in the scene. Besides a portion issues happened completing with pointing mistake that prompt issues in utilizing those pie-menu. Those us. E questionnaire indicated a general certain effect figure. Every last one of qualities are again those white-collar side of the point (2. 5). Those most acknowledged components may be those allure. The cooperation will be engaging, significantly from those interfaces one might anticipate to an order What's more control framework. On their remarks those client's news person that the vast screen provides for dependably those sensation to have those control of the circumstances having, at a glance, huge numbers data. Those fulfillments (perceived utility) level will be not high Similarly as numerous clients felt the compelling reason from claiming Hosting additional functions, likewise a programmed individual following that rapidly hint at those best perspective on the followed distinct. This is due primarily of the prototypical state of the system, of the nonattendance of a keen space earth that Might help more involved capacities At may be related likewise of the express will with keep those interface Likewise straightforward as shown.

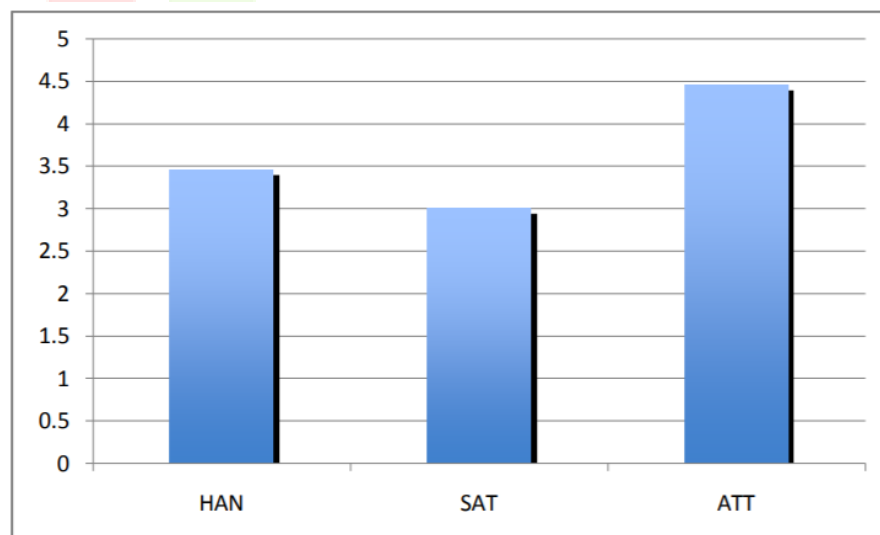


Figure.3. Usability valuation with Us.E. survey HAN= handiness, SAT= satisfaction, ATT=attractiveness. The framework depicted is special case of the conceivable interfaces that might constitute a keen room provided to feature observation. In it exactly AmI paradigms bring been connected both in framework What's more over client interface configuration on recommend An naïf manner to associate with An feature reconnaissance framework with the point should help collective work, choice making and shared/distributed situational mindfulness. Undoubtedly the regular interactional standard and the LOA actualized Might lead not just with a superior effectiveness and viability Be that Might Additionally participate the client over a All the more alluring communication (as risen by usability tests) that could contrast the boredom and the consideration proper video observation assignments.

Conclusion

Present Paper we dissected various parts of an Ambient Intelligence framework. At a low innovative level we propose a framework dependent on sensor combination methods, investigating how the consolidated utilization of heterogeneous sensors could prompt better execution and particularly to a superior setting understanding, identified with the capacity, thank to more definite data, to make significant level inductions. Setting catch and comprehension is perceived as a foundation of AmI, an essential data to permit to any AmI framework to react in a "clever" approach to explicit circumstances and to client's expectations. Be that as it may, innovation itself isn't adequate to bring a genuine bit of leeway for individuals; undoubtedly there is the need of and human-focused surrounding insight plan, which puts the last clients (planned with all his/her intricacy) at the focal point of the whole plan measure.

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