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A Review on Network Robotics using the SPSS Method

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Abstract.

"A networked robot system is a group of artificial autonomous systems that are mobile and mainly use wireless communications or environmental and living systems to accomplish their tasks." The six most common types of robots are flexible vehicles, humanoids, cyborgs, guided driverless cars (AGVs), intelligent driving robots (AMRs), and hybrids. is the aim of robotics. Robotics come in a wide range of varieties. Robotics is the study, practise, and design of using machines (robots) to carry out jobs that have historically been done by people. Numerous businesses, including the manufacture of automobiles, use robots, and robotics for children refers to any activity that helps children understand robots to perform simple tasks and in industries that require humans to work in hazardous environments. Activities include robot-building kits and games Robots continue to evolve and are now found in households as programmable pets, vacuums, and toys. Currently, robots are utilised in a wide range of fields, including manufacturing, surgery, science, space flight, construction, and food packaging. Robots will increase In addition to increasing production and the global economy, this also provides many people with new employment prospects. Nonetheless, there are still cautious about huge job losses. For example, 20 million manufactured jobs will be lost by 2030, or 30% of all jobs would be automated. occupations by that year. It not only aids in the early development of cognitive abilities and mathematical reasoning in young pupils, but it also imparts transferrable skills to other learning domains. They frequently serve as teachers' assistants or serve as avatars for online pupils. The objective is to break down applications into smaller, more manageable pieces by taking into account environment, task, domain, and automation knowledge components and transparently representing them in a formal existing knowledge shared by service applications and robots.

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Decisions regarding Robot Control are then able to be made in light of the premise. At work Death Penalty, tasks are graded based on this knowledge. Information retrieval that is transparent and modular enables human operators to specialize in various fields Adapt their respective areas of knowledge independently. We are The distributed ROBOEARTH project integrated modeling techniques to implement this approach. Today, the majority of robots are employed to carry out monotonous work or occupations deemed too risky for humans. The robot is excellent for entering a structure that could contain a bomb. In factories, robots are also employed to produce goods like automobiles, candy bars, and electronics. Manufacturers can improve the efficiency and effectiveness of their factories by integrating robotic automation and utilizing robotic workforce. Automation can work in dangerous environments; thus humans are no longer required to accomplish certain tasks. They are able to do heavy lifting, hazardous materials, and repetitive tasks. They have reduced accidents and saved businesses both time and money. The Cronbach's Alpha Reliability result. The overall Cronbach's Alpha value for the model is .658 which indicates 66% reliability. From the literature review, the above 50% Cronbach's Alpha value model can be considered for analysis. Software Engineering Defect Prediction the Cronbach's Alpha Reliability result. The overall Cronbach's Alpha value for the model is .658 which indicates 66% reliability. From the literature review, the above 50% Cronbach's Alpha value model can be considered for analysis.

Keywords: Ubiquitous Network Robot Platform, Rob earth knowledge base, Knowledge-enabled task execution,

INTRODUCTION

Robots and the network: Robots provide functionality for the purpose of network management and link state optimisation while the network serves as a means for communication, sensing, and computation for robots. Here, we report the outcomes of a system that addresses the issue of robot navigation. with accuracy and reliability (100% correct navigation in 50 trials at a distance of Ikm) [1]. In bot networks, a robot team's entire membership interacts with the base station, which serves as the team's central controller, via wireless technology [Z]. It is challenging to ensure the establishment of a wireless cell tower that can manage information flow or between two robotic units in various application

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scenarios, nevertheless. However, the robots' ability to move may be severely constrained in order to remain inside the base station's communication range, which could make it more difficult for the robot team to complete the job they have planned. Hence, we think that multichip communication networks that are self-generating, self-healing, and self-regulating are appropriate for fully and partially autonomous multi-robot systems [2]. Disaggregating is an alternative strategy (Kong et al., 2017b), however it may not work well under varying network conditions when a mobile robot traverses across different locations. different signal quality. In this research, we provide a method for addressing these expenses that takes into account elements of the input stream and network conditions, but has not yet been highlighted in cloud robotics [3]. Mobile sensor networks have been developed as a result of the interaction between distributed automation and wireless sensor networks. Highrise mobile sensor networks is becoming more and more popular because they are a preferred course of WSNs where mobility is key to enabling an application. Due to their advantageous benefits and uses, mobile wireless sensors networks (MWSNs) are the subject of extensive research. The integration of mobile robots and stationary nodes improves the capacities both of types of gadgets and opens up new applications in WSNs, where robotics might play a significant role [4]. In Japan, robotics has been consistently supported, initially through technological advancements, commercial operations, and at the top of research efforts to accurately assess its potential. The concept of "Robots and Robotization" is on the verge of a more fundamental shift within manufacturing systems, which will bring about a fair amount of technological change. This is a typical case of dynamic learning and can be viewed as a successful example of the innovation system in Japan. Particularly over time in Japan. Robotic innovation has recently faced significant commercial obstacles, application diversity, and technology developments. Robots have always been considered only useful in manufacturing applications [5]. Most existing robotic problems and solutions for large organisms can be grouped together in a hierarchical fashion and classified into one of three problems. The main disadvantages of digital VLSI enable processing stages: task planning (e.g., depth determination and their large silicon area, relatively slow speed and hand-camera integration), path planning (e.g., robot navigations) high cost of connecting processing units. Constrained robotic implementation can be developed based on the optimization of neural networks and sequential architecture implementations or pattern association problems [6]. The goal of Connectivity Robotics in Urban Locations is to create a flexible framework for

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network robot collaboration with people system users. Our system combines to gather all accessible information, for this, the integrated review of a multi-robot system without using a central server. Such systems rely on the centre to identify the location of the observed person given a variable. As a result, nodes are not resilient to communication errors, lags, or dropouts, and thus do not scale well as nodes increase in number. We selected a decentralised architecture for the URUS framework, where each subsystem simply manages local information and shares it via peer evaluation of a specific variable [7]. Muniz, Zalama, Gaudiano, and Lo'pez-Coronado recommended a neural network framework for evolving nav of an autonomous vehicle to avoid obstructions in 1995, by unsupervised learning. In 1998, the development of sectarian struggle movements through Unfortunately, it is not ideal to programme bot actions using learning-based techniques, especially during the early learning stage [8]. Stability problems are brought on by the connections in between neuromorphic controller and observer. We'll demonstrate how a closed-loop system controls all signals in the same way in the end. As a result, without the need for an offline learning phase, here is a demarcation fundamental premise for designing nonlinear dynamic tracking cookies for robotic systems network weights. Unlike adaptive approaches, we don't need to know the precise dynamics robot, the regularity of unidentified process parameters, or the difficult regression matrix creation [9]. We'll look at the trajectory determination problem first, and then we'll briefly look at the coordinate transformation problem. Lastly, a robotics application will be discussed along with some demonstrative computer simulations that examine the challenge of motor command generation. Identifying the desired path in visual coordinates, translating the path from visual to physical coordinates, and producing motor commands are the first two steps. Computational theories are put forth for the first two issues based on physiological data and prior models, and a modular neural network approach is presented to address the motor command [10]. Distributed robotic application creation, deployment, management, and adaptability are made easier by networked robotic systems. By combining environment task, domain, and automation knowledge aspects and transparently modelling them in a rigorous knowledge base shared by robots and service applications, we hope to modularize applications. On the basis of fictitious tasks that are assessed based on this information during task performance, robot control may make choices. Human operators with varying levels of experience can autonomously adjust their respective fields of knowledge thanks to transparent and modular information processing. We put this idea into practise by

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fusing the ROBOEARTH project's knowledge representation techniques with a ubiquitous network robot platform's distributed job execution capabilities [11]. controlled artifact and neural networks. Nevertheless, because the values These techniques do not guarantee the anticipated system reaction when combined required actual outcomes can also be known as part of the training process. It is unlikely that their incorrect teaching signals lead to the creation of inverted dynamic models as a result. In the area of flexible automation, R is crucial. One of the key features of manipulators for their diverse applications is high-speed, high-precision path tracking. Operators are vulnerable to organized [12]. In the literature, various extensions of the planned framework have been put forth. focuses on the issue of the limited level of agent engagement. In order to deal with low-energy agents, the challenge is extended to include distance classes of the dispersal density function while advancing in the direction of ideal locations. Power diagrams and other generalised Voronoi diagrams are employed in this situation. We suggest three significant additions to the current work. we first address the issue of introducing diversity into a robot workforce [13]. Commanding a mobile robot in areas where GPS is unavailable calls for particular strategies. A notional path is often formed in an environment that is specified by a collection of recognisable items, such as barriers and landmarks. The importance of devices with knowledgeable Amazon Echo like digital assistants is rising in the current including the ability to register actions, control the connected smart devices' statuses, and answer to inquiries. The best way to supplement intelligent voice assistants with physical manipulation is via assistive robots. A voice assistant can direct a person's request to with an assist robot [14]. Nearly all of the fault detection strategies discussed above have only dealt While nonlinear modelling is necessary for an accurate depiction of robotic systems, using linear methodologies results in significant modelling error, which can reduce the effectiveness of the fault-finding system. Moreover, the robot platform's kinetics are frequently subject to unforeseen linear changes. As a result, a nonlinear modelling framework is necessary to account for a wide range of real-world failure scenarios [15]. To control a mechanical manipulator including an input time to relax and an output limitation, a restricted controllers have high tracking capabilities and maintain output boundaries. Implementing the suggested control methods and designing controls for mobile robots with additional input limitations are among the ongoing tasks [16]. without placing limitations on the design and manner of operation of robots. For a vision-based navigation challenge using a microprocessor implemented in a 2 cm long micro robot, GAS was utilised

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to build SNNs. They employed a large population with 60 chromosomes and CA with constant crossover as well as mutation probability [17]. With web-based interfaces, robotics software can access helpful services like path planning, item detection, and robust grab planning. Because engineers just need to master a single web API, they can drastically shorten the time it takes to develop robotics applications by eliminating the requirement to deploy and integrate various software packages. Also, all users of cloud-based services have immediate access to upgrades and changes, which simplifies software maintenance and offers ongoing updates the end users [18]. Robotic services are composed of several components for robots, including sensors, actuators (i.e., robots), and telephones as sensors as well as communication devices, and service apps that control such devices to offer certain services to people in real-world settings. Robotic services are anticipated to significantly contribute to maintaining an older population [19]. networks for inverse Jacobian approximating and feature extraction. We put into practice an entirely neural network-based system that approximates the Jacobian picture using a backpropagation network and extracts the feature vector using additional networks. To extract characteristics to feed into the inverse Jacobian, we apply two types of hosts - based and network image compression [20].

MATERIAL AND METHOD

The Ubiquitous Network Robot Platform:

Between robotic service on the one side and software as well as hardware components on the other, the UNR-PF serves as an interface layer. Via the component API, components implement clearly defined interfaces (such as those that identify a person or a reaction) and offer this capability to the website. Programs use these fundamental building pieces to construct useful functionality. Robot applications are uninformed of how capabilities is provided or which components do so because all dependencies are described in terms of abstract interfaces. A platform with wheels or legs can be used to construct a moving surface interface since they both have the ability to move the robot.

The Roboearth knowledge base: The goal of Robo Earth is to develop a "World Wide Web for Robots," a web-based platform akin to Wikipedia enabling robots to exchange information about activities, objects, and environments (Figure 3). Based on the robot capabilities that are examined while downloading them, every piece of information that is

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kept in the knowledge base is labelled with its requirements. A robot can decide whether or not this knowledge can be used in its current form using these requirement standards.

Knowledge-enabled task execution: The ROBOEARTH language lacks directly executable job descriptions, but instead elaborates on what actions to take when without providing any justification, much like recipes. These must be translated by an execution engine, which then calls them to the appropriate robot components and so on, in order for them to be used by the robot. action plans Classes that make up actions, such Localizing a Person, are linked to the respective UNR-PF elements. Recipes are loaded prior to execution. The system verifies that all necessary parts are present. Using the job description from the procedure, a state machine is created, and execution is started by invoking the related UNR-PF components according to the recipe.

Interactive knowledge editor interface: We pair the execution engine with a user-friendly interface that enables human operators to add to and modify the robot's body of knowledge, add new items to a map or carry out new tasks, as well as start and track task progress on a remote robot. For runtime cooperation between both the operation, the task-level controller, and the various (robot) components carrying out the task, the UNR-PF acts as a distributed platform. By providing the robot its human operator with a shared base of knowledge regarding the task at hand and the surroundings in which the robot(s) will work, ROBOEARTH achieves this.

Integration of human operators as knowledge sources: While doing a task, a robot has the ability to call a human operator and request any missing information. The communication occurs as a component that is instructed to accept information utilising the UNR-PF by adding a human operator interface. If the robot application, which keeps track of how the task is being completed, notices a problem, it will issue a command to contact the operator. The application can be informed that the information is available by the human once they have downloaded the necessary data from the ROBOEARTH knowledge base, researched the problem, updated the data, and uploaded it back to ROBOEARTH.

Method: SPSS Statistics is a statistical control Advanced Analytics, Multivariate Analytics, Business enterprise Intelligence and IBM a statistic created by a software program is package crook research. A set of generated statistics is Crook Research is for a long time SPSS Inc. Produced by, it was acquired by IBM in 2009. Current versions (after 2015) icon Named: IBM SPSS Statistics. The name of the software program is to start with social Became the

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Statistical Package for Science (SPSS) Reflects the real marketplace, then information SPSS is converted into product and service solutions Widely used for statistical evaluation within the social sciences is an application used. pasted into a syntax statement. Programs are interactive Directed or unsupervised production Through the workflow facility. SPSS Statistics is an internal log Organization, types of information, information processing and on applicable documents imposes regulations, these jointly programming make it easier. SPSS datasets are two-dimensional Have a tabular structure, in which Queues usually form Events (with individuals or families) and Columns (age, gender or family income with) to form measurements. of records Only categories are described: Miscellaneous and Text content (or "string"). All statistics Processing is also sequential through the statement (dataset) going on Files are one-to-one and one-to-one Many can be matched, although many are not in addition to those case-variables form and by processing, there may be a separate matrix session, There you have matrix and linear algebra on matrices using functions Information may be processed.

3. RESULT AND DISCUSSION

TABLE 1. Descriptive Statistics

	N	Range	Minimum	Maximum	Sum	Mean		Std. Deviation	Variance
The Ubiquitous Network Robot Platform	90	4	1	5	282	3.13	.115	1.093	1.196
The ROBOEARTH knowledge base	90	4	1	5	270	3.00	.131	1.245	1.551
Knowledge-enabled task execution	90	4	1	5	291	3.23	.133	1.264	1.597
Interactive knowledge editor interface	90	4	1	5	294	3.27	.119	1.130	1.276
Integration of human operators as knowledge sources	90	4	1	5	297	3.30	.158	1.495	2.235
Valid N (listwise)	90								

Table 1 shows the descriptive statistics values for analysis N, range, minimum, maximum, mean, standard deviation The Ubiquitous Network Robot Platform, The Rob earth knowledge base, Knowledge-enabled task execution, Interactive knowledge editor interface and Integration of human operators as knowledge sources this also using.

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TABLE 2. Frequencies Statistics

		The Ubiquitous Network Robot Platform	The Rob earth knowledge base	Knowledge-enabled task execution	Interactive knowledge editor interface	Integration of human operators as knowledge sources
N	Valid	90	90	90	90	90
	Missing	0	0	0	0	0
Mean		3.13	3.00	3.23	3.27	3.30
Std. Error of Mean		.115	.131	.133	.119	.158
Median		3.00	3.00	3.00	3.00	3.00
Mode		3	3	3	3	5
Std. Deviation		1.093	1.245	1.264	1.130	1.495
Variance		1.196	1.551	1.597	1.276	2.235
Skewness		-.429	.321	-.043	-.260	-.098
Std. Error of Skewness		.254	.254	.254	.254	.254
Kurtosis		.047	-.794	-.900	-.198	-1.484
Std. Error of Kurtosis		.503	.503	.503	.503	.503
Range		4	4	4	4	4
Minimum		1	1	1	1	1
Maximum		5	5	5	5	5
Sum		282	270	291	294	297
Percentiles	25	3.00	2.00	2.00	3.00	2.00
	50	3.00	3.00	3.00	3.00	3.00
	75	4.00	4.00	4.00	4.00	5.00

Table 2 Show the Frequency Statistics in Software Engineering Defect Prediction. The Ubiquitous Network Robot Platform, The Rob earth knowledge base, Knowledge-enabled task execution, Interactive knowledge editor interface and Integration of human operators as knowledge sources curve values are given.

TABLE 3. Reliability Statistics

Cronbach's Alpha Based on Standardized Items	N of Items
.658	5

Table 3 shows the Cronbach's Alpha Reliability result. The overall Cronbach's Alpha value for the model is .658 which indicates 66% reliability. From the literature review, the above 50% Cronbach's Alpha value model can be considered for analysis.

TABLE 4. Reliability Statistic individual

	Cronbach's Alpha if Item Deleted
The Ubiquitous Network Robot Platform	.587
The ROBOEARTH knowledge base	.656

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Knowledge-enabled task execution	.536
Interactive knowledge editor interface	.591
Integration of human operators as knowledge sources	.614

Table 4 Shows the Reliability Statistic individual parameter Cronbach's Alpha Reliability results. The Cronbach's Alpha value for The Ubiquitous Network Robot Platform .587, The ROBOEARTH knowledge base.656, Knowledge-enabled task execution .536, Interactive knowledge editor interface .591 and Integration of human operators as knowledge sources .614 this indicates all the parameter can be considered for analysis.

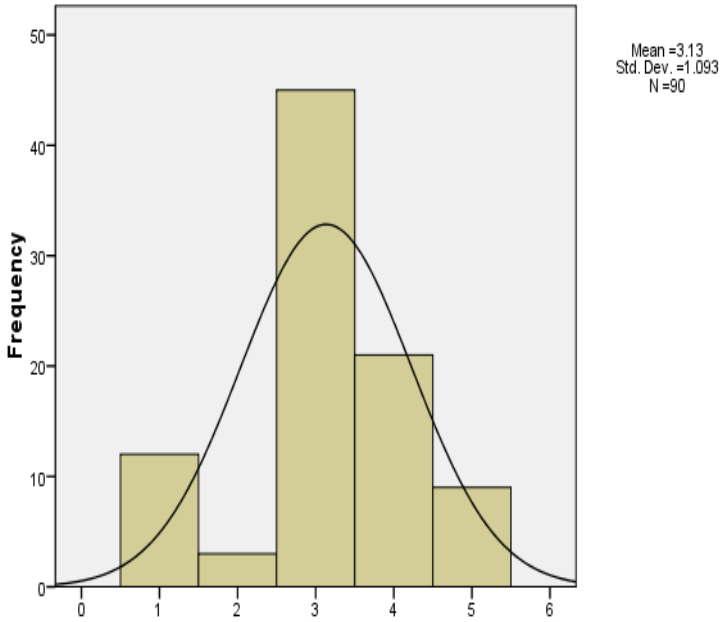

FIGURE 1. The Ubiquitous Network Robot Platform

Figure 1 shows the histogram plot for The Ubiquitous Network Robot Platform from the figure it is clearly seen that the data are slightly Left skewed due to more respondent chosen 3 for The Ubiquitous Network Robot Platform except the 2 value all other values are under the normal curve shows model is significantly following normal distribution.

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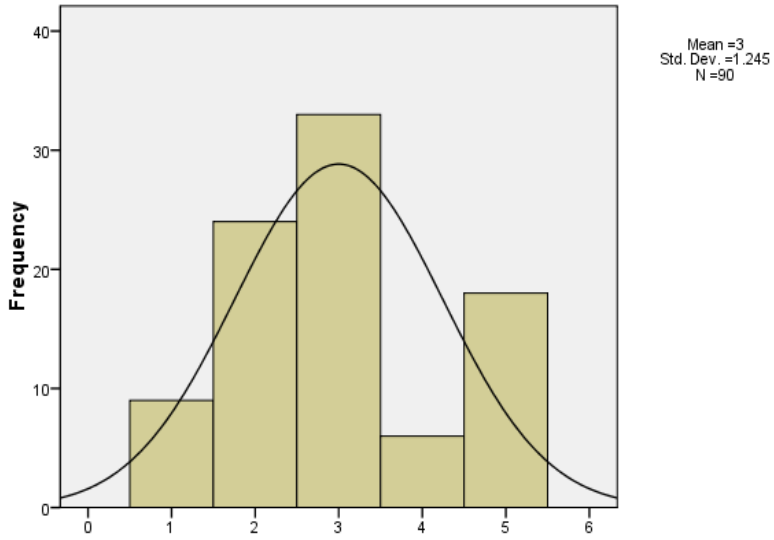

FIGURE 2. The Rob earth knowledge base

Figure 2 shows the histogram plot for The Rob earth knowledge base from the figure it is clearly seen that the data are slightly Left skewed due to more respondent chosen 3 for The Rob earth knowledge base except the 2 value all other values are under the normal curve shows model is significantly following normal distribution.

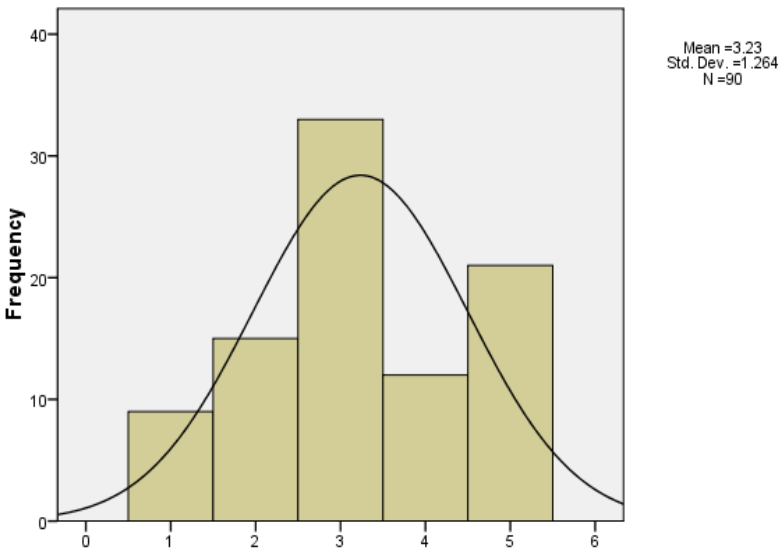

FIGURE 3. Knowledge-enabled task execution

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Figure 3 shows the histogram plot for Knowledge-enabled task execution from the figure it is clearly seen that the data are slightly Left skewed due to more respondent chosen 3 for Knowledge-enabled task execution except the 3 value all other values are under the normal curve shows model is significantly following normal distribution.

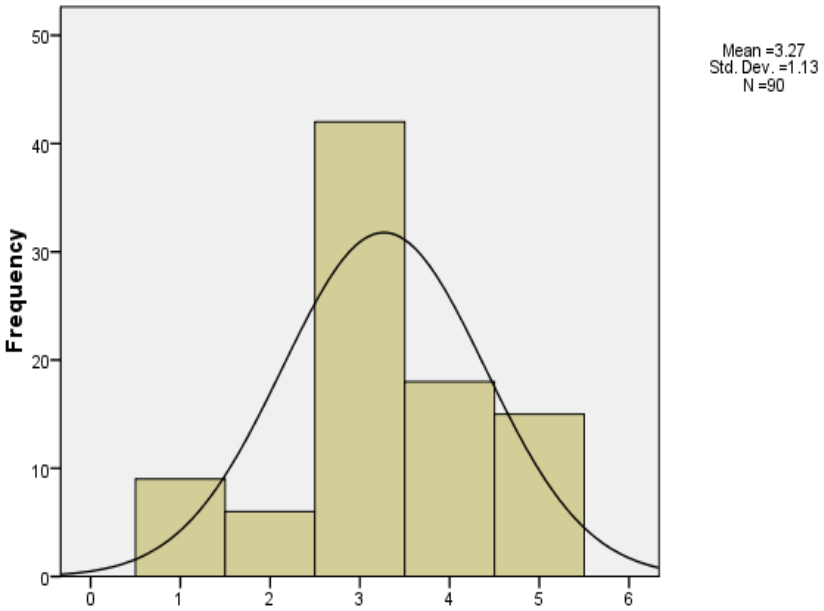

FIGURE 4. Interactive knowledge editor interface

Figure 4 shows the histogram plot for Interactive knowledge editor interface from the figure it is clearly seen that the data are slightly Left skewed due to more respondent chosen 3 for Interactive knowledge editor interface except the 2 value all other values are under the normal curve shows model is significantly following normal distribution.

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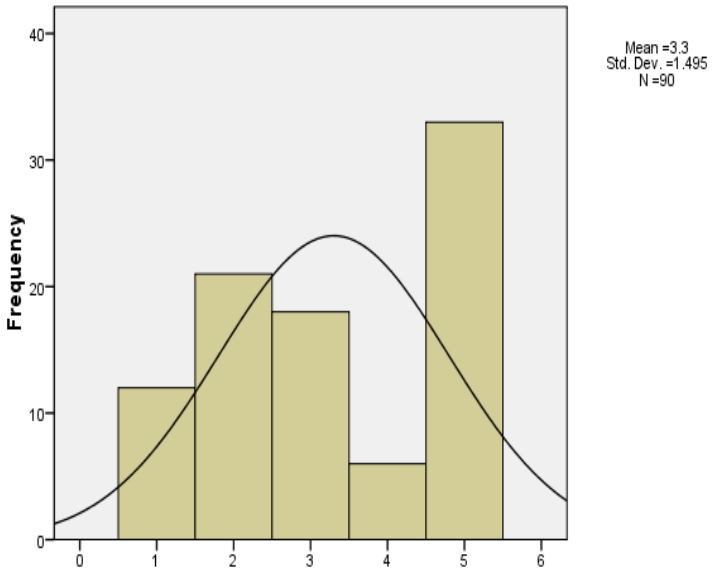

FIGURE 5. Integration of human operators as knowledge sources

Figure 5 shows the histogram plot for Integration of human operators as knowledge sources from the figure it is clearly seen that the data are slightly Right skewed due to more respondent chosen 5 for Integration of human operators as knowledge sources except the 2 value all other values are under the normal curve shows model is significantly following normal distribution.

TABLE 5. Correlations

	The Ubiquitous Network Robot Platform	**The Rob earth knowledge base**	**Knowledge-enabled task execution**	**Interactive knowledge editor interface**	**Integration of human operators as knowledge sources**
The Ubiquitous Network Robot Platform	1	.149	.368**	.407**	.264*
The Roboearth knowledge base	.149	1	.214*	.096	.290**
Knowledge-enabled task execution	.368**	.214*	1	.499**	.319**
Interactive knowledge editor interface	.407**	.096	.499**	1	.172
Integration of human operators as knowledge sources	.264*	.290**	.319**	.172	1
**. Correlation is significant at the 0.01 level (2-tailed).					
*. Correlation is significant at the 0.05 level (2-tailed).					

Table 5 shows the correlation between motivation parameters for The Ubiquitous Network Robot Platform. For Interactive knowledge editor interface is having highest correlation with The Rob earth knowledge base and having lowest correlation. Next the correlation between motivation parameters for The Rob earth knowledge base. For Integration of human operators

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as knowledge sources is having highest correlation with The Ubiquitous Network Robot Platform and having lowest correlation**.** Next the correlation between motivation parameters for Knowledge-enabled task execution. For Interactive knowledge editor interface is having highest correlation with The Rob earth knowledge base and having lowest correlation**.** Next the correlation between motivation parameters for Interactive knowledge editor interface. For Knowledge-enabled task execution is having highest correlation with The Rob earth knowledge base and having lowest correlation**.** Next the correlation between motivation parameters for Integration of human operators as knowledge sources. For Knowledge-enabled task execution is having highest correlation with Interactive knowledge editor interface and having lowest correlation**.**

4. CONCLUSION

"A networked robot system is a group of artificial autonomous systems that are mobile and mainly use wireless communications or environmental and living systems to accomplish their tasks." The six most common types of robots are flexible vehicles, humanoids, cyborgs, guided driverless cars (AGVs), intelligent driving robots (AMRs), and hybrids. is the aim of robotics? Robotics come in a wide range of varieties. Robotics is the study, practice, and design of using machines (robots) to carry out jobs that have historically been done by people. Numerous businesses, including the manufacture of automobiles, use robots, and robotics for children refers to any activity that helps children understand robots to perform simple tasks and in industries that require humans to work in hazardous environments. At work Death Penalty, tasks are graded based on this knowledge. Information retrieval that is transparent and modular enables human operators to specialize in various fields Adapt their respective areas of knowledge independently. We are The distributed ROBOEARTH project integrated modeling techniques to implement this approach. Today, the majority of robots are employed to carry out monotonous work or occupations deemed too risky for humans. Robots and the network: Robots provide functionality for the purpose of network management and link state optimization while the network serves as a means for communication, sensing, and computation for robots. Here, we report the outcomes of a system that addresses the issue of robot navigation. with accuracy and reliability (100% correct navigation in 50 trials at a distance of Ikm) Between robotic service on the one side and software as well as hardware components on the other, the UNR-PF serves as an

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interface layer. Via the component API, components implement clearly defined interfaces (such as those that identify a person or a reaction) and offer this capability to the website. The goal of Robot Earth is to develop a "World Wide Web for Robots," a web-based platform akin to Wikipedia enabling robots to exchange information about activities, objects, and environments. Ratio studies are statistical analyses of data from appraisals and property valuations. Nearly all states utilize them to produce quantitative measure of the proportion of current market price about which individually estimated taxable property is appraised as well as to offer assessment performance indicators. The Ubiquitous Network Robot Platform, The Rob earth knowledge base, Knowledge-enabled task execution, Interactive knowledge editor interface and Integration of human operators as knowledge sources. The Cronbach's Alpha Reliability result. The overall Cronbach's Alpha value for the model is .658 which indicates 66% reliability. From the literature review, the above 50% Cronbach's Alpha value model can be considered for analysis.

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