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Manikandan S (✉ profmaninvp@gmail.com)

E.G.S. Pillay Engineering College <https://orcid.org/0000-0002-9378-518X>

Chinnadurai M

E.G.S. Pillay Engineering College

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ICS approach for Implementing Data Logging in Agent Interaction Systems from Remote Locations

Manikandan S^{1*} and Chinnadurai M²

¹*Assistant Professor/IT, E.G.S. Pillay Engineering College, Nagapattinam, Tamil Nadu, India*

²*Professor/CSE, E.G.S. Pillay Engineering College, Nagapattinam, Tamil Nadu, India*

**(corresponding author: profmaninvp@gmail.com)*

Abstract - Design a complex Agent Interaction system by behavior, operations and method for monitoring Data Logging in Remote Location can be tedious and time consuming. The simulation environments are desired factor and platform for investigating complex agent systems. Such environments are used to conduct various experiments on a variety of information such as localization, perception, communication and knowledge representation. Many of these systems are transferred the information to the agent by intelligent behavior and data logging procedure. We build an intelligent agent to measure the data logging from various remote locations by getting log information by using own objectives, operations, relationships and knowledge. The four methods are used to collect or process data logging from various locations. i. Number of request is injected from various effects based on time period. ii. The intelligent behavior are noticed based on constraints and limit characteristics. iii. Each log is climbed based on time factor and behavioral operations and the logs are recorded. iv. Both the numbers of nodes are traversed and variation of each node relationship collected. By utilizing the comparison in each location values are monitored by different cases. The relationship between each climbed information are collected and estimated by using tracking control agents and simulation results are provided to verify effective implementation.

Keywords: Agent Interaction System, Data Logging, Tracking Control

1. Introduction

Recent years, the autonomy nature agent are used in various real time applications for human operations, home automation and captures the images and configure the defects from various locations. Distributed tracking control networks is extensively scattered because of sliding mode, adaptation control, impulse and feedback. Each agent loads are measured based on physical and logical behaviors, operation

and performance. The different engineering paradigms are inspected, collaborated and object oriented methodologies, offers to manage interaction and communication in each agent. Commonly the system's conduct and operations are in moderation monitored and the issues are constructed about digest process [1].

In this paper, we present data logging mechanism to collect log information collected from various locations based on smart components reaction, relationship, human interaction, domain objects, etc. The Component can be considered an autonomous multi-agent system that can be programmable for monitoring and measuring the content. In this approach how to deal the real user interact with agent with incompleteness, inconsistency, unreliable and prediction factors [2]. The unambiguity of the instructor or agent model requires making inferences, knowledge, prediction, clarification and decision making. In this case, the agent collect logs from various locations with intelligent behavior with make successful decision and track record the log values [3].

In this paper the various contributions are provided for developing or designing agent interaction systems allowing users, inputs, inspection that makes up the system with the operations. The proposed data logging inspection, collaboration, schema method is implemented to calculate log information various location based on behavioral characteristics, domain object and functionalities. Each component may be deals with uncertain instruction, sudden changes or intelligent behavior so we can demonstrate how the prototypes are in the development and simulating different models in the virtual environment [6]. This paper is organized as follows. Section II discusses existing related works. Section III describes the proposed framework and mechanism for data logging components. Section IV implemented results.

2. Related work

Data logging is the collection of data over a period of time, and is something often used in scientific experiments. Data logging systems typically monitor a process using sensors linked to a computer. Most data logging can be done automatically under computer control. The agent records data over time or in relation to location either with a built in instrument or sensor or via external instruments and sensors. The terms data logging and data acquisition are often used mutually. However, in an archival situation they are reasonably different. A data logger is a data acquisition system, but a data acquisition system is not necessarily a data logger [5]. Most of them are made for assisting the agents and measure the interaction while inspecting log details. Various types of Data Logging methods have been used as collecting logs. For example, an event data recorder (EDR), a device installed by the manufacturer in some automobiles which collects and stores various data during the time-frame immediately before and after a crash. A Holter monitor is a portable device for continuously monitoring various electrical activity of the cardiovascular system for at least 24 hours [8].

In Robocop was first standard problem for the evaluation of theories, algorithms, architecture and operations in the area of artificial Intelligence, robotics and computer vision. The proposed framework followed the inspection of real time AI problems, theories, methods and attributes of domain object. The two new challenges were necessary to initiate the development and following are the leagues for simulation in designing agents [3].

Physical Model, which focuses on different aspects of physical design, movement, locations and computer vision.

Software Model, which focuses 2D or 3D dimension to measure or monitor log values.

The various simulation approaches are used in investing and configuring real implementation various agent behaviors and logs are recorded. The Limitation of various impulses or time-varying parameters is in practice and the channels are monitored based on networked environments. In this paper, the following questions are answered in different sections. i. how to implement data logging method in each location and how the information are collected and recorded. ii. how to measure tracking controls of multi-agent model. iii. how to analyze various time-varying factors by quantifying their impacts on the coordination in terms on behaviors and operations.

The simulation model involves the variety of action commands available to each agent that includes angular field, specified power, direction, specification, position and strategies. Alderbaran NAO agent simulates dynamically, collision detection and friction based model for calculation log based information and retrieval process is very tedious [9]. This property has been leveraged for the development and analysis of widespread application at various optimization, localization, planning and implementation of agent-to-agent communication. The various simulation leagues agents have their own environments itself. So the domain object has collect log information which enables replicable quantification of experimental performance at speed, stability and accuracy.

The Webots agent interaction system supports fully automated, massively parallel analysis complex investigation problems at different intervals. The selection of various log information are to satisfy the number of constraints in the environment and avoid making decision at different time intervals. In addition the comparing widespread applications are beyond the scope of log mechanism and each experimental result to replicate and expand the hardware-independent manner [10].

From NTU Co-Space demonstrates how the learning and acquires knowledge from various location. The framework has been applied to a virtual aging-in-place at various environments wherein the virtual occupants are persuasive agents. The case study shows that, to integrate diverse the intelligent capabilities by teaching and interaction model. More comprehensive investigations are including the different log information such as effectiveness of developing a large scale system or applications [11][12].

The proposed framework in this paper adopts a domain object based learning and intelligent system to measure and monitor logs. We examine Data Logging ICS model to let the components in the system to predict and anticipate the instruction or log information. The instructions can be represented by particular components while predicting logs and inferring operations to be developed by a collaborative process at different environments.

3. Agent Architecture and Framework

In this model, we explained the designing agent interaction system with data logging, software architecture, learning methods and protocols. The agent may communicate each component to get various instructions and new task to execute the process. An approach is enclosed to design autonomous nature system and implement using various

collaborative approaches. The model is shown in below Figure 1.

Figure 1: The Protocol model for Agent – Log Process

Figure 1 describes the agent architecture to implement data logging concepts in various agent functionalities such as compute, storage, network and operation. Each level shows i. how the domain object presents easy to verify the condition to implement data logging concepts. ii. how to analyze various time varying using various input impulses and to validate their impacts using coordination process. iii. how to bridge the gap between compute and storage model, multi-agent system and network controllers using various investigation approaches.

4. Event and Notations

An event or action can be defined as an object or representation or values. The value holds at moment. $P = \{P_1, \dots, P_n\}$ is a set of attributes and $P \in Y$ in which Y is set of possible action at various Euclidean vector form in P_i whereas η is a set of identifier with respect to I $\{i=0, 1, 2, \dots, N\}$ and n is number of input coordinates. Attribute $P_i \in P$ can be expressed as P_i set of identifier η_i and set of attributes and action parameter are used to measure the data logging. The implication match m_p (m – data logging instruction value) can be defined various action P_i and P_j can be measures as follows,

$$m_p(P_i : P_j) = (\sum_{i=0}^n \sum_{j=1}^m |\eta(P_i) \cdot \eta(P_j)| \cdot (1 - ((\eta(P_{i-1}) + Y(P_{i-1})) * (\eta(P_{j-1}) + Y(P_{j-1})))) / (\sum_{i=0}^n \sum_{j=1}^m |Y(P_i) \cdot Y(P_j)|) \dots \dots \dots (1)$$

$$\text{Whereas } P_i \text{ and } p_j \Rightarrow P, P_j \equiv m_p(P_i : P_j) \geq \ell \dots \dots \dots (2)$$

In case ℓ - is the vigilance parameter or matching parameter for calculating threshold value of each action P

$$\text{action}(P_i : P_j) = \begin{cases} Y(P_i : P_j) \\ \eta(P_i) < \eta(P_j) \\ \text{don't care} & \eta(P_i) > \eta(P_j) \\ \dots\dots\dots (4) \end{cases}$$

null $\eta(P_i) = \eta(P_j)$

where they don't care attributes are always match or bound the condition.

2. Collaboration

The collaborative methods are implemented with following conditions.

- how the time varying properties are lead to calculate multi-agent inputs or logs
- The impulse response are calculated based on time and coordination of each domain object

The initial condition of the system (1)

$$x_i(t) = P_i(t) \quad -\tau \leq t \leq \tau \quad i = 1, 2, 3, \dots, N \text{ and } \tau - \text{time variant condition} \dots\dots\dots (5)$$

from the eq..(5)

$$s_i(t) = Ax_i(t) + Bx_i(t) + \dots\dots\dots (6)$$

The error rate or injected value

$$e_i(t) = C \sum_{i=1}^n s_i(t) + x_i(t) \dots\dots\dots (7)$$

By injecting impulse control based on $i_n \in (\tau, N)$. so the collaborative condition for data logging input based on η

$$i_n(t) = \begin{cases} \sum_{i=1}^n e_i(t) i \in \eta(t) \\ \dots\dots\dots (8) \\ 0 & i = 0 \end{cases}$$

Collaborative condition for data logging input based

on Y

$$i_n(t) = \begin{cases} 1 & i \neq Y(t) \\ 0 & I = 0 \\ \sum_{i=1}^n e_i(t) - x_i(t) & i = Y(t) \\ \dots\dots\dots (9) \end{cases}$$

3. Schema

It is an overall design of the system to monitor and implement various time source $\{t_1, t_2, \dots, t_n\}$. The following cases are represented to set of rules or protocols to test data logging process.

case 1: Both η and Y are time varying

case 2: $s_i(t)$ is time varying and η and Y are constant

case 3: $e_i(t)$ calculation based on $s_i(t)$ and η and Y are time varying

case 4: Both $e_i(t)$, $s_i(t)$ representation

case 1: Both η and Y are time varying

The average injective impulse control intervals of various impulses are c_i ($i=1, 2, 3, \dots, n$) which is not larger than τ_i , if there exist, the position number τ_i , such that

$$e_i(t) \geq ((c_i - \tau_i) / \tau_i - (s_i(t) + x_i(t))) \dots\dots\dots (10)$$

whereas the interval τ_i varies $-\tau \leq t \leq \tau$ which impulse sequence $s_i(t)$ and $x_i(t)$ means $e_i(t)$ varies positively where $i=0, 1, \dots, N$. So both η and Y are time varying processes

$$e_{i,j}(t) = \begin{cases} 1 & \tau_i = 0 \\ 0 & \tau_i < 0 \\ \sum_{i=1}^n \sum_{j=1}^N \left(\frac{(c_i - \tau_i)}{\tau_i} \cdot \frac{(c_j - \tau_j)}{\tau_j} \right) & -\tau \leq t \leq \tau \\ \dots\dots\dots (11) \end{cases}$$

When the impulse controllers are implemented the time varying factor with position instance so the log are collected based on various time intervals from the input coordinate position (i, j) .

case 2: $s_i(t)$ is time varying and η and Y are constant

Let as assume that η and Y are the constant value set as $i=0$,

Where $s_i(t)$ is the factor to set domain object values at various I values $\{i=0, 1, \dots, N\}$

So

$$e_{i,j}(t) = \begin{cases} 0 & \eta, Y, s_{i,j}(t) - \text{Constant} \\ 1 & -\tau \leq s_{i,j}(t) \leq \tau \\ \sum_{i=1}^n \sum_{j=1}^N \left(\frac{(c_i - \tau_i)}{\tau_i} \cdot \frac{(c_j - \tau_j)}{\tau_j} \right) & \eta, Y - \text{Constant}, s_{i,j}(t) > 0 \\ \dots\dots\dots (12) \end{cases}$$

The time varying factor matches different situation $s_{i,j}(t)$ and constant values of η and Y.

case 3: $e_i(t)$ calculation based on $s_i(t)$ and η and Y are time varying

This case η, Y and $s_{i,j}(t)$ are time varying factor so to calculate or collect log information record, measure the domain object from different intervals and environments.

so that,

$$e_i(t) = \sum_{i=1}^n \frac{(c_i - \tau_i)}{\tau_i} + s_i(t) \text{ whereas } -t \leq 0 \leq t$$

..... (13)

Here (i,j) location point and η, Y values are time varying factor

$$\text{group } (P_i, P_j) = e_{i,j}(t) \cdot (\eta(P_{i,j}) + Y(P_{i,j})) \text{ (14)}$$

The action various form different intervals and the input coordinates are calculating impulse control model equations (12,13).

case 4: Both $e_i(t)$, $s_i(t)$ representation

Both $e_i(t)$, $s_i(t)$ representation impulse control bonding effect distance calculated based on varies radius r^a and r^b . So the distance calculated by

$$d(r^a, r^b) = \sum_{i=1}^N |r^a - r^b| \text{ (15)}$$

So the distance calculated to measure the injected information from various locations. Based on distance factor

$$\text{group } (P_i, P_j) = e_{i,j}(t) \cdot ((\eta(P_{i,j}) + Y(P_{i,j})) + d(r^a, r^b)) \text{ (16)}$$

The impulse factor measured by using various best, worst and average case analysis.

$$\text{group } (P_i, P_j) = \begin{cases} 0 & d = 0 \\ 1 & d \leq 0 \\ e_{i,j}(t) \cdot \eta(P_{i,j}) \cdot Y(P_{i,j}) & d \geq 0 \end{cases} \text{ (17)}$$

The distance is the important factor to calculate time varying co-efficient and logs are to be recorded.

6. Main Result

Here the various cases are analyzed to measure the log information at varies scenario. The interaction between the domain object and agent are discussed by following constraints.

1. **Detection and Resolution:** This scenario demonstrates the various action sequence and context. The following algorithm is used to detect and inspect the log information at different environments.

1. Set of input various $N=1,2,\dots,n$ (n – number of input sequence)
2. if $i=0$ then coordinate position at origin level and no log record are to be recorded
3. else
4. The logs are collected by means of η and Y with respect to τ and t
5. Repeat step 2 to 4

In this case the logs are collected always to inject exact input parameters. The following graph shown the time varies at different intervals and the input values with respect to η and Y .

Figure 3. Log information collected based on time and coordinate values

2. **Recognition of Log Information:** In this scenario,

the logs are collected from various injected critical conditions. The conditions are represented at various intervals and different locations. The relationship between each object and their log details are incorporating perception, relationship and records of another object in the domain. The following algorithm is used to calculate relationship between each injected values and domain object values from different locations.

1. The time interval $t=1,2,3,\dots,n$
2. The impulse factor $e_i(t)$ measured from $s_i(t)$ and $x_i(t)$
3. Condition at various case time intervals t – constant, varies and post level
4. if $i=0$ then the coordinate values at origin factor
5. else
6. The different coordinate values are record based on (i,j) position factor
7. $\text{group } (P_i, P_j) = e_{i,j}(t) \cdot ((\eta(P_{i,j}) + Y(P_{i,j})) + d(r^a, r^b))$
8. $e_i(t) = \sum_{i=1}^n \frac{(c_i - \tau_i)}{\tau_i} + s_i(t)$

9. Calculate $e_i(t)$ and store log

10. Repeat step 4 to 9

The user can teach or trigger the agent, once the agent get or start collecting log at any action. The event are noticed when the log are appeared based on time at the peak values shown in the graph with respect to η and Y

Figure 3. Relationship between each agent action and coordinate values

3. Cooperative and Interactive Approach

This phase demonstrates the framework for developing interactive activity beyond the interaction representation. In this scenario the interaction between each object logs are collected based on incoming request and cooperative behaviors. For this phase may defect the condition and ask the agent for confirmation to store and read intelligent logs values for making good decision. The entire scenario of an agent in place of various domains shows that relationship and connectivity among the agents are enables the incremental and recorded of logs. The data logging methods are used to many multi-agents to coordinate each other. In a similar manner more than one active node or action may be solved on the same principles. At each stage the agent collect the log values while the agent at different environments or locations based on input conditions.

7. Conclusion

We presented a framework for designing an agent interaction system for monitoring data logging in remote locations. This framework offers a methodology for developing various simulation environments and the log information are collected recorded. At each cycle the log values are collected

and monitored from various location, behaviors, knowledge and functionalities. During each cycle the agent may also indicates the possible rules and procedure to make a design and to relate with other agents. We collected data logs from various locations based on intelligent behavior, time factor, traversal and variations. Each location values are recorded and performances are evaluated using Data logging ICS approach. The scenario also shows that the injected logs can be applied beyond a single agent but can be used to measure or monitor a group of agents by using different coordinates and tasks. Our experimental analysis various applications from different environments and they are treated as critical process. The measurement of each stage are monitored and recorded by every log values. One example, the logging control agent interaction system is presented to verify by using different input conditions. The effectiveness is calculated by proposed results. Future research topics include the extension of our results in multi-agent or other online storage operation in practical systems.

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AUTHORS PROFILE

Dr. S. Manikandan is working as Assistant Professor and Head of IT in E.G.S Pillay Engineering College, Nagapattinam. He completed Ph.D in Anna University, 2020, M.E-CSE in Annamalai University with First class with Distinction and Honours, 2012 and B.Tech - IT in E.G.S Pillay Engineering College with First class with Distinction, 2010. His research work includes Artificial Intelligence, Network Security, Algorithms and Cloud Computing.

Dr. M. Chinnadurai is working as Professor and Head of CSE in E.G.S Pillay Engineering College Nagapattinam. He completed his Ph.D in Anna University, Chennai in the field of VLSI at Faculty of Information and Communication Engineering, Anna University, Chennai. He is professional member in IEEE, CSI, ISTE, etc and his research work includes Artificial Intelligence, Network Security, Algorithms and Cloud Computing.