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Energy Efficient Cloud Computing Using Artificial Neural Networks

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Abstract: This effort focuses on building an intelligent, energy-efficient cloud architecture to improve cloud computing infrastructures. The rate at which cloud data gets modernized has increased, leading to more reviews comparing the various modernization methodologies and models. Several wealthy nations, including Turkey, have upgraded to more complicated and energy-efficient cloud infrastructure. We designed a Python application that uses an AI framework to maximize cloud computing's usage of computing resources and clean, renewable energy. This plan outlines concepts for a future neural network-trained digital ecosystem (ANN). The ANN model details energy forecasting tasks within a constrained system. Prominent corporations use AI to design policies to secure their cloud infrastructures and digital assets. Cloud computing systems were modernized by acquiring, normalizing, and transforming their file formats. Most cloud-based infrastructures were updated successfully. This was expected, given digital implementations dominate these systems. We'll investigate the energy consumption of AWS, AZURE, GCP, and Digital Ocean. Since most files were still on paper in 2015, the number of upgrades was modest. By 2020, a large part of cloud computing systems will be converted to digital format, with 98.68% accuracy for all cloud computing systems when trained on 80% of the data and evaluated on 20% of the data. Smart energy-efficient cloud solutions are replacing traditional data centers year by year. Smart energy-efficient cloud systems help preserve cloud computing systems and understand how cloud platforms are modernized and perform in energy prediction.

Keywords: Energy Efficient, modernization, artificial intelligence, cloud computing, machine learning.

1. INTRODUCTION

The improvement of a trustworthy, intelligent, and energy-efficient cloud computing infrastructure is crucial to the AI-based energy modernization presented in this thesis. As stated in [1], cloud computing platforms are indispensable for human connection and the completion of a vast array of essential tasks. The gaming industry and animation production are only two examples of how cloud computing has transformed the entertainment industry. As described in [2], it also replaced arduous manual processes in sectors such as factory automation, virtual reality, disability assistance, rehabilitation, and performance evaluation. Users can now attach specialized hardware to their cloud platforms, allowing for a comprehensive analysis of the seams and aspects of specific server components. However, it is neither pleasant nor natural. It is not inexpensive to outfit oneself with equipment tailored for specific jobs. According to [3], vision-based solutions are favored over other approaches due to their usability, affordability, and intuitive design.

Existing paper-based cloud computing systems are the driving force behind this research, which aims to create an intelligent, energy-efficient cloud system for cloud platforms. As mentioned in [4], the risks of maintaining a digital ecosystem have been acknowledged for some time. This study's objective is to examine how, similar to cloud-based healthcare platforms, analysts might be equipped with computerized modernization actions to increase the long-term stability of their examination data. The study concentrated on climate-related exercises

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in emergency departments and resulted in Sustainable Information Packages (SIP) for three specialized advanced research libraries, which included power, money, science, and creativity for change as the technique that will be continued in [5]. Current paper-based medical records will be standardized and converted to cloud-based platforms in compliance with the OAIS, an ISO standard that serves as the foundation for the future computerized environment.

According to [6], mediated correspondences and information are now fused onto sophisticated structures that are utilized by practically every population on the planet. Numerous research have examined the potential outcomes of the cutting-edge change, but it could be quite a while before we begin to experience the full effects. Between 2015 and 2019, we presented a new computerized model for usage in hospitals, clinics, and the cloud. As the cycle in [7] indicates, the rapid development of health information has led to an increase in both the frequency of unanticipated opportunities for disclosure and the likelihood of inadvertently wiping valuable data sources from documents containing aggregated human information. As stated in [8], organizational and individual behaviors have adapted to the new context more slowly than advancements in information storage technology (equipment and programming). While data storage has gotten less expensive and more accessible, information modernization has become more time-consuming due to its significance and one-time nature.

Figure 1: Areas of impact for cloud computing managing the workloads [8].

Controlling and operating mechanical equipment requires the use of a mouse, keyboard, or remote control. Clearly, the relationship between humans and machines will evolve in the years to come. According to [9], numerous efforts have been undertaken to modify human-machine interaction approaches and components that already exist. The concept is comparable to speaking or writing computer or robot instructions. This is how humans communicate, thus it follows that robots may be taught to do the same. This effort is merely a baby step in that direction, to be sure. It must comprehend various directions and human activities.

1.1. PROBLEM STATEMENT

There are many related issues of energy prediction of cloud computing platforms. The most widely recognized ones are:

1. Cloud Computing Energy Localization: Means to decide the picture position of each single location of record.
2. Cloud Computing Energy Identification: Plans to recognize the nearness and area of highlights, for example, VMS, storage, database, compute and security.
3. Cloud Computing Energy Recognizable Proof: Thinks about an info server against a database and reports a match, assuming any.
4. Cloud Computing Energy Verification Issue: Checks the case of the normalization of record in an information server.
5. Cloud Computing Energy Gauge Issue: Gauge the area and conceivable direction of a record in a server grouping.

Cloud Computing Energy Articulation Acknowledgment: Concerns recognizing the full of states (To check if the lines on cloud computing systems changes over time in different cloud computing systems) of different cloud platforms.

1.2. Aims Of Contribution

Our system was designed with the user experience in mind from the ground up. The following are other areas in which our method differs from others:

1. efficient conversion of energy. Increasing cloud energy utilization or cloud marker collection is a component of several existing techniques. We believe that this constrains the potential of the cloud and strive diligently to guarantee that no identifying information is included in our forecasts.
2. Prediction of Instantaneous Power for Cloud-Based Services. The majority of modern computers with a dedicated graphics card should be able to utilize our strategy with no issues. Additionally, the system must be capable of identifying energy-efficient at a high frame rate that is effectively real-time. We will keep track of data at the frame rate we wish. Our design and implementation are tailored to maximize available time.
3. Unacceptable absence of calibration. Once trained, our system should operate successfully in any situation without additional calibration.
4. Robust and accurate to a pinpoint. Our technique is designed to forecast the location and types of the user's cloud computing systems with high precision and minimal false positives. In addition, the system must be unaffected by environmental noise, user location, energy positioning, and similar factors.
5. bringing the cloud up to date unilaterally. Our system should make it easy to add additional forms. Our system should be able to handle a broad variety of complicated forms, including those used to predict cloud computing's energy use with the correct training..

2. REVIEW OF ANALOGUES

According to [11], the most pressing challenge is modernizing cloud computing systems so that they may migrate to the cloud and utilize various machine learning approaches. The enormous effort required to make the robot acceptable for industrial tasks may be considered as an experiment in human mimicry. According to [12], the objective is for the robot to learn from people's body language and eventually comprehend its surroundings. Consequently, detecting motion in real time is an essential challenge for this project and a smart place to begin. According to [13], in the not-too-distant future, machine learning will work alongside people in enterprises where it must comprehend energy conservation and eventually be capable of repetition. It

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requires greater object identification and the capacity to determine the exact location of cloud computing machines managed by humans anywhere on Earth. According to [14], we will not include any cloud computing systems in our tracking methods, therefore we will only monitor cloud computing systems as they are used by humans. The remaining chapters of the thesis will create a form or trajectory recognition algorithm that will make it easier to detect recordings and make sense of their motions. Machine learning might be used to monitor how records are moved. As detailed in [16], a tracking method for cloud computing systems may identify cloud platforms as they move through space, form by form and in real time. When attempting to follow an item, most tracking algorithms consider its dimensions, colour, and shape. However, as illustrated in [17], if tracking is lost or absent, algorithms cannot locate cloud computing platforms. The mask, which will serve as an identifier for cloud computing systems and faces, is a crucial component of intelligent, energy-efficient cloud systems. Since there is no unique cloud platform mask, depth cannot be used to identify cloud computing systems. Setting extreme constraints would minimize false detection and leave less information for processing, but this comes at the cost of not being able to precisely match the segmentation and tracking effectiveness of fake cloud platforms, as discussed in [18]. This will decrease the performance of the tracking algorithm. However, if we maintain excessively high thresholds, detection errors will increase due to noise and inaccurate cloud platform indicators.

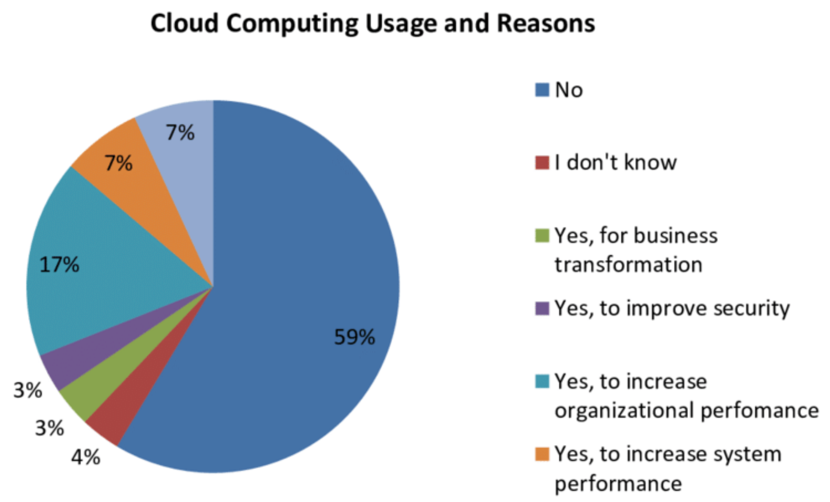

Figure 2. Cloud computing usage and reasons recognized in Gartner's 2020. Each parameter represents a label of every reason that belongs to the smart energy system [18].

As cloud computing systems move through record space, the record motion tracking method constantly and frame-by-frame locates them. Frequently, tracking algorithms consider the object's size, hue, and form [19]. Without it, however, algorithms cannot locate cloud computing systems and must be reset. According to [20], the cloud platforms mask will serve as a visual cue for cloud computing systems and faces in the surrounding area, making it an essential component of intelligent, energy-efficient cloud systems. Since there is no unique cloud platform mask, depth cannot be used to identify cloud computing systems. Setting strict restrictions would prevent erroneous detection while leaving less data for processing, but this would come at the expense of segmenting and tracing the effectiveness of false cloud platforms. This will decrease the performance of the tracking algorithm. In contrast, as mentioned in [21], if we maintain thresholds that are too high, cloud platform noise and inaccurate indications may increase transformation errors

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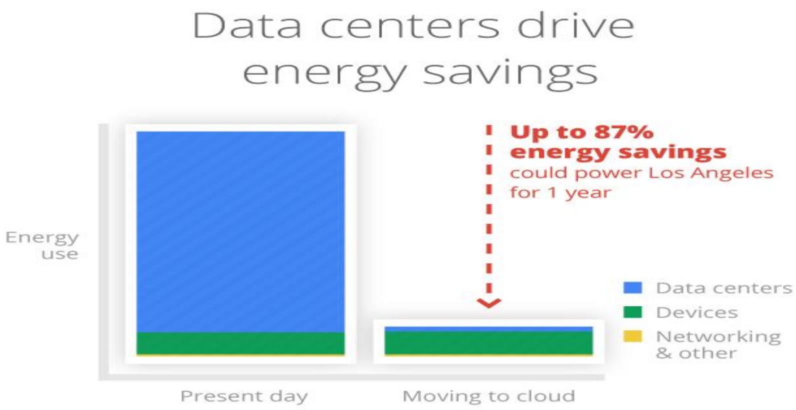

Figure 3: The inevitability of cloud computing for energy as compared with data centers: source [21].

Numerous solutions for real-time record keeping have been tested and proven unsatisfactory. Since this challenge has existed for some time, numerous strategies for recognizing and making sense of recorded motion have been developed, as described in [22]. Humans utilized advanced technology to find historical landmarks and gloves to interact with the environment. According to [23], the record cloud is a straightforward solution to a complex hardware issue; it enables users to acquire data from cloud platforms employing color cloud computing systems with a range of chrominance models. Numerous record-based identification and tracking systems are present in contemporary dissertations. Modeling, finding key features for identification, contour tracking, and the application of [24]-mentioned classification approaches like as neural networks and binary tree classification are all feasible options for representing an object. Cloud-based data can be sorted by machine learning algorithms and classifiers after intense training with huge datasets. According to [25], this method is computationally expensive because it demands a great deal of processing. Applying energy-efficient depth data and attempting to discover records using both cloud computing systems is the typical approach most suited to this task.

3. METHODOLOGY

It is striking that the medical services cloud platforms have progressively utilized further organizations however progressed profound learning procedures will give extraordinary proficiency because of its compositional adaptability with Artificial Neural Network (ANN). Having more information models have more prominent authentic power making it conceivable to rough more intricate capacities. Additionally, quick improvement in the field ceaselessly presents new procedures and structures extending the tool kit for plan. Notwithstanding, science has consistently accepted effortlessness, and it is sensible to contend that the organization ought to be kept as basic as could be expected. A review has been utilizing the ANN strategy even scrutinized the normal act of involving pooling and refined initiation capacities in AI. All things being equal, they recommend utilizing simply repetitive layers with appropriately chosen step and channel size boundaries.

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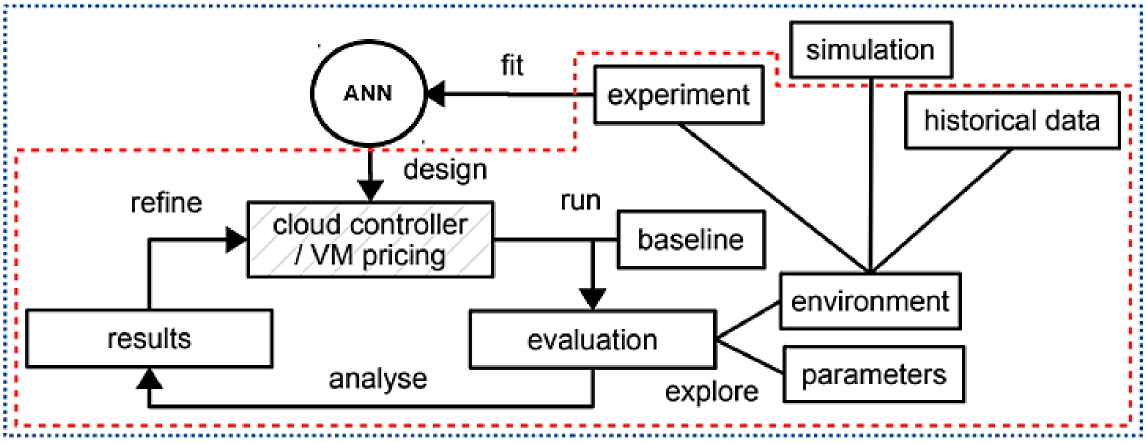

Figure 4: A system architecture of energy efficient cloud computing system.

The ANN is responsible for highlight extraction in this technology, where the elements to which they will not be completely settled by accumulating experience with varied information linkages. Some ANN models are intended to focus on the orientations of individual lines and edges, whereas others take a more global perspective (for example portions of learned designs). Because it combines data from lower-level ANN models via predefined links, the ANN model is an excellent indication of progress (for example diminishing aversion to a deformity or area shift of an example). In a single cell plane, all ANN models get input from other ANN models (referred to as "the information window"), including ANN models that extract the same element from multiple spatial locations. The models will only activate if they get input from a source. By adjusting the emphasis of the highlighted data, the framework can be made less sensitive to the individual element locations, making the component easier to identify. Yet, one can also apply their own perspective to the activities of the models. As the information windows for the various models widely overlap, the models may be considered to be performing a spatial blurring on the excitatory signals they get from the models. The signals from models that identify the same element from slightly different locations are averaged to generate the necessary spatial pooling. Occasionally, the input window for excitatory cells is flanked by a smaller inhibitory region. Therefore, the models can distinguish between a continuous line and its endpoint, and the network can recognize hazy characteristics. Due to the fixed input windows of the models, when the network advances to higher stages, the size of the ANN-planes decreases.

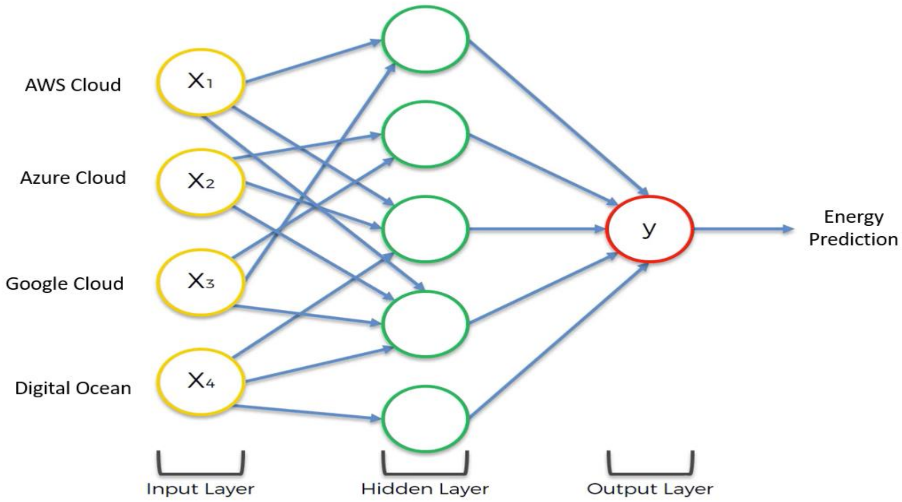

Figure 5: Illustration of a deep Artificial Neural Network with layers.

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This research led to the development of ANNs, which are cognition-focused like biological neural networks. By decoupling convolutions and subsampling, this method offers a sophisticated numerical explanation for the observed behavior of the models. In its cycle of preparation, the organization effectively eliminates its capacity for discernment. In contrast to neo-discernment, which requires individual preparation cycles for each cell layer and controlled preparation cycles for the result layer, ANN may locate a global minimum across all boundaries by employing the back-spread technique. The fundamental scientific ideas that make ANNs so suitable for applications such as record smoothing.

3.1. Description Of Data

This information was collected from the public dataset for AI distributed computing frameworks. In actuality, distributed computing systems may appear differently, both at the ground level and in terms of the energy efficiency they offer. Clouds can have numerous consequences on developed species, plant states, geology, soil qualities, atmospheric conditions, development techniques, and other sources of biodiversity. This similarity in features makes it difficult to distinguish between numerous cloud-based medical care delivery alternatives for the field. Therefore, it is challenging to create efficient algorithms that can recognize a large variety of field cases without overfitting to a specific instance. Even beyond the variation observed in any specific environment, satellite health care cloud platforms can exhibit even more pronounced inter- and intra-class variances. This is also true for cloud-based medical care platforms in diverse agricultural areas, at varied times or stages of development, or under varying barometric and lighting conditions. The increased availability of high-quality geo datasets to the general public presents an opportunity to use increasingly diverse ground truth and satellite record information (for example, in equal proportions from different review regions) to improve the overall model's precision, robustness, and adaptability. By collecting and processing more data, the capacity to adapt to various environmental circumstances, such as altitude, pressure, humidity, temperature, and even the presence or absence of barometric pressure, lightning, and precipitation, can also be enhanced (for example, irregular scale, bending, shading offset or jitter, presentation of record turmoil). The data reference model is given in this link: https://www.kaggle.com/competitions/cloud-classification/data

4. RESULTS

In this research work, The fundamental purpose is to create an intelligent and energy-efficient cloud platform so that traditional paper-based cloud computing can continue to be utilized. Professionals have been aware of the risks associated with maintaining a complex society for quite some time. As with cloud-based healthcare platforms, the objective of this study is to determine the most persuasive means of convincing analysts to commit to the long-term retention of exploratory data. This study utilized artificial neural network (ANN) technology to investigate the processes at work in healthcare settings that contribute to the creation of supportable data bundles (SIP) for three specialized inspection digital libraries. The Open Archive Information System (AI) idea is supported by paper-based data packages. A component of the new, advanced environment that will standardize and transition paper-based data to cloud platforms is an ISO standard called artificial intelligence (AI).

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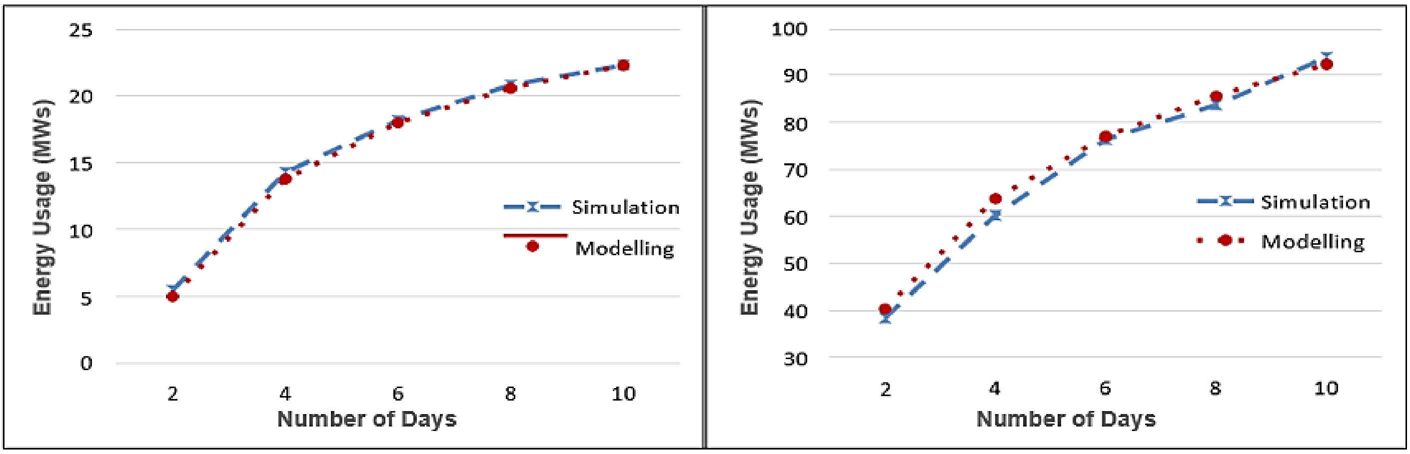
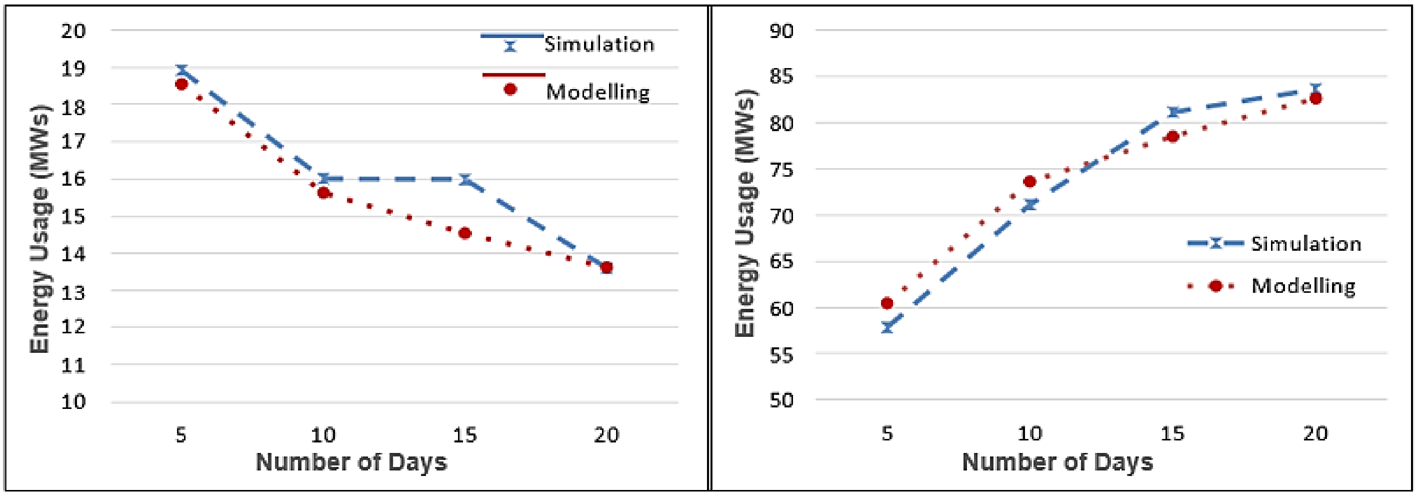


AWS AZURE

Figure 6: Breakdown of cloud platforms scatter plots for AWS and Azure. Each subfigure shows the original cloud platforms scatter plot, along with scatter plots restricted to true / predicted simulation of cloud platforms where the modeling is above the indicated threshold for energy usage.



Google Cloud Digital Ocean

Figure 7. Breakdown of cloud platforms scatter plots for Google Cloud and Digital Ocean Cloud. Each subfigure shows the original cloud platforms scatter plot, along with scatter plots restricted to true / predicted simulation of cloud platforms where the modeling is above the indicated threshold for energy usage.

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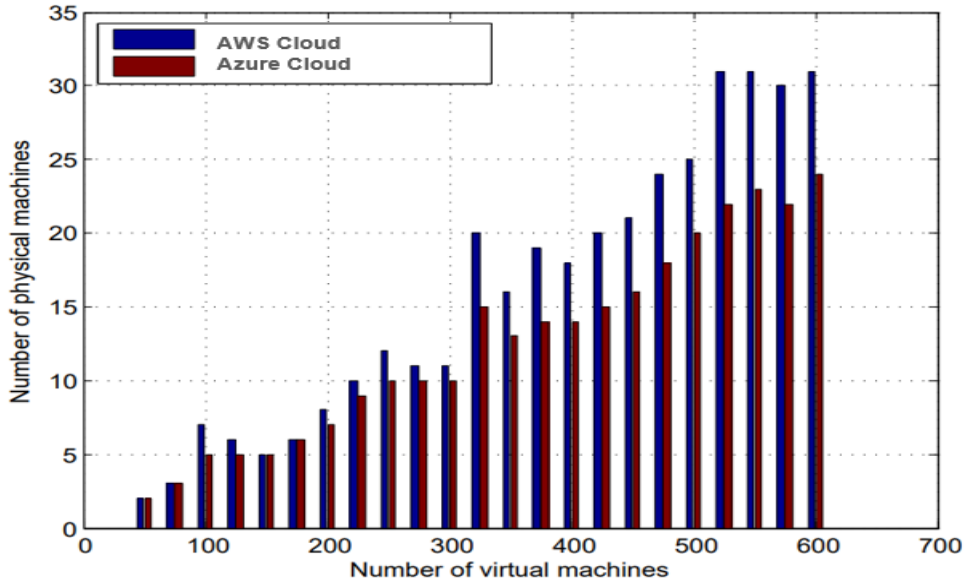

Figure 8. The visual description of AWS and Azure cloud repository in terms of number of physical machines and proprietary virtual machines using ANN per nodes.

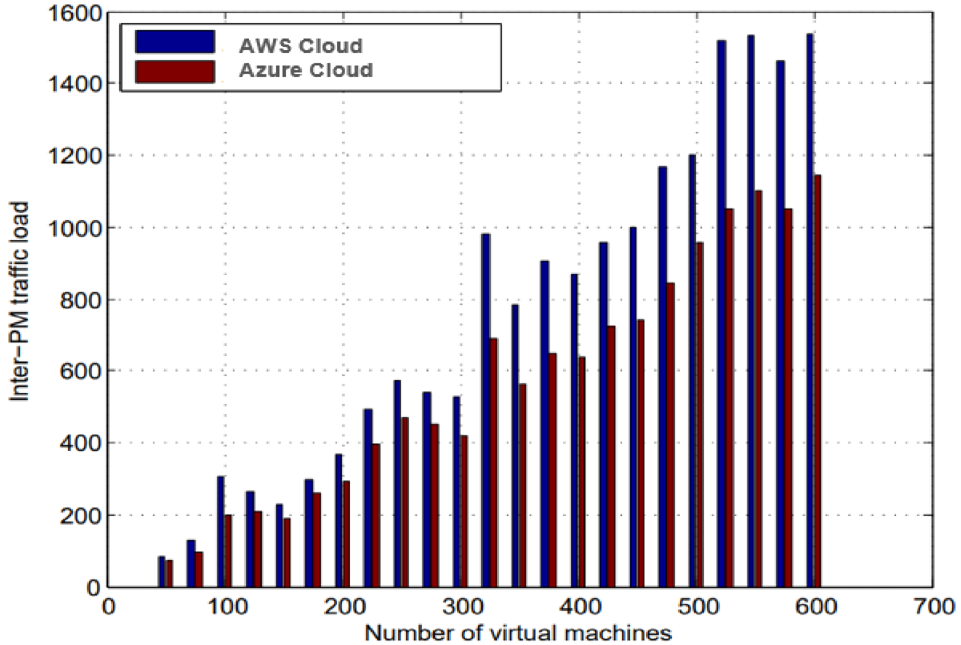

Figure 9. The visual description of AWS and Azure cloud repository in terms of Inter-PM traffic load and proprietary virtual machines using ANN per nodes.

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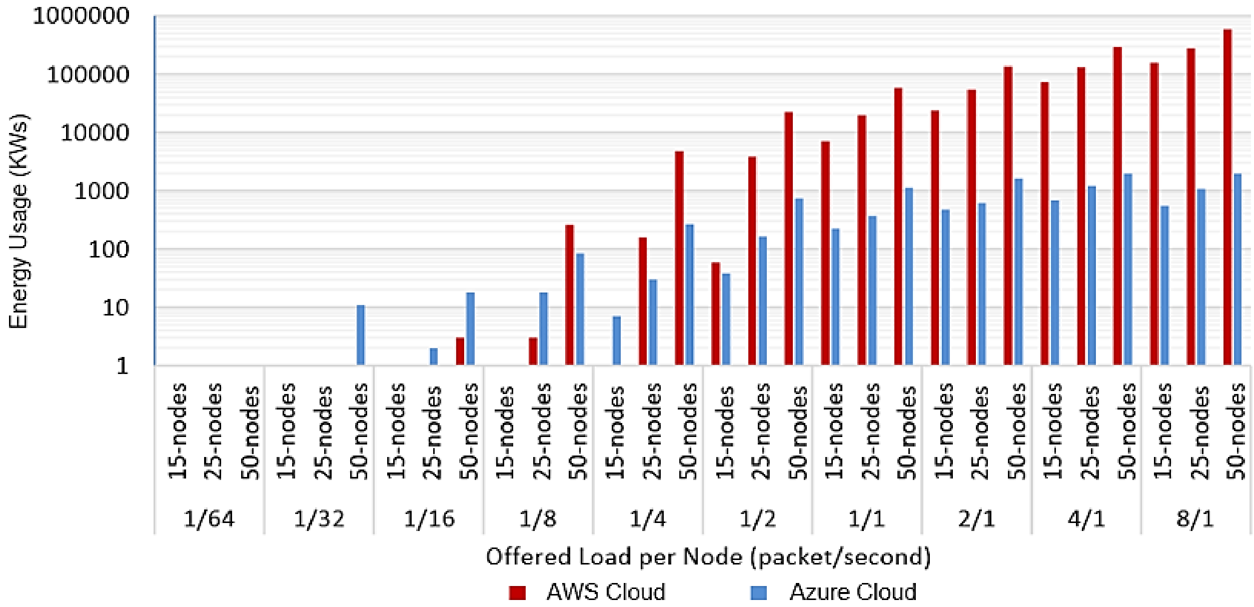

Figure 10. Reliance of ANN model execution on the quantity of energy being used AWS and Azure Clouds in the communicated light stack. The AWS and Azure energy usage in KWs is the quantity of offered load per node (packet/second).

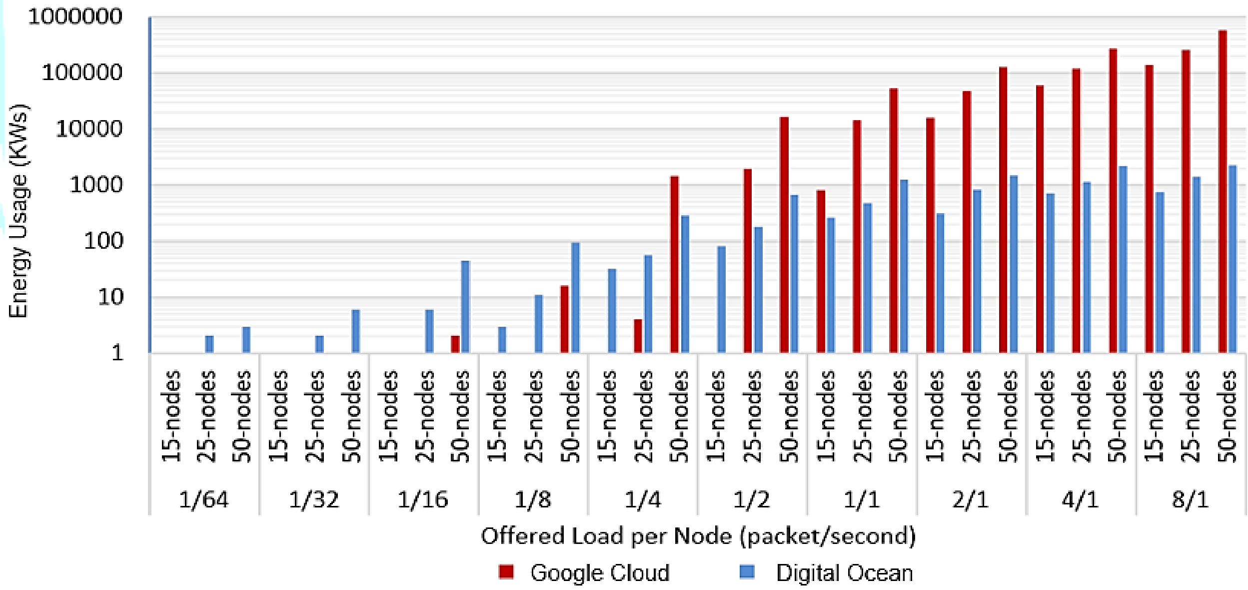

Figure 11. Reliance of ANN model execution on the quantity of energy being used Google Cloud and Digital Ocean Clouds in the communicated light stack. The AWS and Azure energy usage in KWs is the quantity of offered load per node (packet/second).

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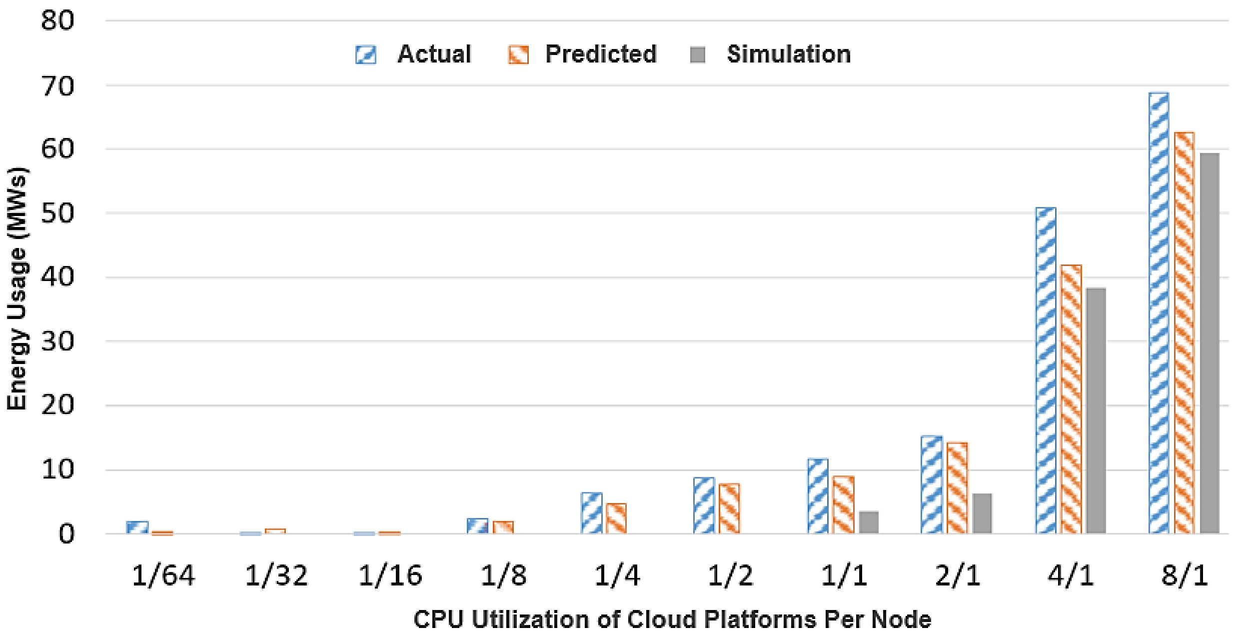

Figure 12. Breakdown of cloud platforms scatter plots in terms of actual energy usage, predicted energy usage and simulation energy usage for CPU utilization of cloud platform per node.

Table 1: The compassion for the modernization of cloud computing systems in digital form among existing digital libraries.

ARTICLE	TECHNIQUE	Cloud Platforms
[51]	Decision Tree and Random Forest (DT-RF)	AWS, AZURE
[52]	Support Vector Machine (SVM)	AWS, GOOGLE CLOUD
Proposed	Artificial Neural Network (ANN)	AWS, AZURE, GOOGLE CLOUD, DIGITAL OCEAN

5. CONCLUSION

In the study, Although AI is being used to improve the energy sector, its impacts go far beyond paper-to-digital conversion. The solution is to update cloud-stored data. Due to these gaps, retrieving paper-based data may be challenging. With this novel, energy-efficient cloud computing solution, the data may be retrieved from any digital repository where it is stored. As many rich nations have upgraded their ANN procedures, several server regulations now require digital storage of reports. By modernizing these technologies, we converted most cloud computing systems to digital formats between 2014 and 2021. Major archives will adopt cloud-based and digitally-modernized cloud computing from 2014 to 2021. Since most files were still on paper in 2014, cloud platform updates were slow. Cloud computing solutions achieved 98.68% accuracy after training on 80% of the data and testing on the remaining 20%. This smart, energy-efficient cloud technology replaces paper with cloud computing. The change ends in 2021. This project digitizes three major cloud-based digital libraries whose scale exceeds our current ways of navigating them. The judgments taken by the antiquities writers for three separate digital libraries, the framework that regulates them, and the techniques that keep up with the frameworks are crucial for our sophisticated modernization. Experts are the main source of knowledge and determine the value of rare artifacts. Because how we modernize our information will decide the success of the computer age, modernization strategies should be adapted to cultural needs.

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5.1. FUTURE RECOMMENDATIONS

To meet the issues of a more networked global community, a growing number of international standards, such as the AI, are being developed. There are two metrics that tend to correlate with the absolute growth in the average best validation error.

1. As the number of classes increases and the number of distinct samples in the training set declines, the relative significance of subsequent advances will decline. As the number of selected classes increases from seven to ten, the disparity narrows and can even become negative
2. Even though the dataset is still somewhat tiny, classification accuracy increases when data augmentation is applied to the entire dataset in addition to the twenty classes

REFERENCES

1. Zhang, K.; Liu, X.; Shen, J.; Li, Z.; Sang, Y.; Wu, X.; Zha, Y.; Liang, W.; Wang, C.; Wang, K. Clinically applicable AI system for accurate diagnosis, quantitative measurements, and prognosis of cloud energy usage using computed tomography. Cell 2020, 181, 1423–1433.
2. Peng, M.; Yang, J.; Shi, Q.; Ying, L.; Zhu, H.; Zhu, G.; Yan, H. Artificial Intelligence Application in Cloud Energy Diagnosis and Prediction; 2020. Available online: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3541119
3. Vaishya, R.; Javaid, M.; Khan, I.H.; Haleem, A. Artificial Intelligence (AI) applications for CLOUD platform. Diabetes Metab. Syndr. 2020, 14, 337–339.
4. Jin, C.; Cheny, W.; Cao, Y.; Xu, Z.; Zhang, X.; Deng, L.; Zheng., C.; Zhou, J.; Shi, H.; Feng, J. Development and evaluation of an AI system for cloud diagnosis. MedRxiv 2020.
5. Mei, X.; Lee, H.-C.; Diao, K.-Y.; Huang, M.; Lin, B.; Liu, C.; Xie, Z.; Ma, Y.; Robson, P.M.; Chung, M.; et al. Artificial intelligence– enabled rapid diagnosis of patients with CLOUD. Nat. Med. 2020, 26, 1224–1228.
6. Laghi, A. Cautions about radiologic diagnosis of Cloud energy driven by artificial intelligence. Lancet Digit. Cloud platforms 2020, 2, e225.
7. Jamshidi, M.B.; Lalbakhsh, A.; Talla, J.; Peroutka, Z.; Roshani, S.; Matousek, V.; Saeed, R.; Mirhamed, M.; Zahra, M.; la Spada, L.; et al. Deep Learning Techniques and Cloud Drug Discovery: Fundamentals, State-of-the-Art and Future Directions. In Emerging Technologies During the Era of Cloud Platform. Studies in Systems, Decision and Control; Arpaci, I., Al-Emran, M., Al-Sharafi, M.A., Marques, G., Eds.; Springer: Cham, Switzerland, 2021; Volume 348.
8. Roshani, S.; Jamshidi, M.B.; Mohebi, F.; Roshani, S. Design and Modeling of a Compact Power Divider with Squared ResonatorsUsing Artificial Intelligence. Wirel. Pers. Commun. 2021, 117, 2085–2096.
9. Salman, F.M.; Abu-Naser, S.S. Expert System for cloud diagnosis. Int. J. Acad. Inf. Syst. Res. (IJAISR) 2020, 4, 1–13. Available online: http://dspace.alazhar.edu.ps/xmlui/handle/123456789/588
10. Wynants, L.; Van Calster, B.; Collins, G.S.; Riley, R.D.; Heinze, G.; Schuit, E.; Bonten, M.M.J.; Dahly, D.L.; Damen, J.A.; Debray, T.P.A.; et al. Prediction models for diagnosis and prognosis of CLOUD infection: Systematic review and critical appraisal. BMJ 2020, 369, m1328.

https://journals.researchparks.org/index.php/IJHCS e-ISSN: 2615-8159 | p-ISSN: 2615-1898
Volume: 05 Issue: 12 | Dec 2023

11. Aydemir, D.; Nuriye, N. Correspondence: Importance of the validated serum biochemistry and hemogram parameters for rapid diagnosis and to prevent false negative results during cloud platform. Biotechnol. Appl. Biochem. 2021, 68, 390–391.
12. Wang, S.; Zha, Y.; Li, W.; Wu, Q.; Li, X.; Niu, M.; Wang, M.; Qiu, X.; Li, H.; Yu, H.; et al. A Fully Automatic Deep Learning System for cloud Diagnostic and Prognostic Analysis. Eur. Respir. J. 2020, 56, 2000775.
13. Sperrin, M.; Grant, S.W.; Peek, N. Prediction models for diagnosis and prognosis in CLOUD. BMJ 2020, 369, m1464.
14. Ludvigsson, J.F. Systematic review of cloud in children show milder cases and a better prognosis than adults. Acta Paediatr. 2020, in press.
15. Yi, Y.; Lagniton, P.N.; Ye, S.; Li, E.; Xu, R.-H. cloud: What has been learned and to be learned about the novel coronavirus disease. Int. J. Biol. Sci. 2020, 16, 1753–1766.
16. Elghamrawy, S.M. Diagnosis and prediction model for cloud energy response to treatment based on Artificial Neural Network and whale optimization algorithm using CT images. MedRxiv 2020.
17. Castiglioni, I.; Ippolito, D.; Interlenghi, M.; Monti, C.B.; Salvatore, C.; Schiaffino, S.; Polidori, A.; Gandola, D.; Messa, C.; Sardanelli, F. Artificial intelligence applied on chest X-ray can aid in the diagnosis of cloud infection: A first experience from Lombardy, Italy. MedRxiv 2020.
18. Wynants, L.; Van Calster, B.; Bonten, M.M.J.; Collins, G.S.; Debray, T.P.A.; De Vos, M.; Haller, M.C.; Heinze, G.; Moons, K.G.M.; Riley, R.D.; et al. Systematic review and critical appraisal of prediction models for diagnosis and prognosis of cloud infection. MedRxiv 2020.
19. Ghoshal, B.; Tucker, A. Estimating uncertainty and interpretability in deep learning for coronavirus (cloud) detection. arXiv 2020. Available online: https://arxiv.org/abs/2003.10769
20. Jamshidi, M.B.; Lalbakhsh, A.; Talla, J.; Peroutka, Z.; Hadjilooei, F.; Lalbakhsh, P.; Jamshidi, M.; La Spada, L.; Mirmozafari, M.; Dehghani, M.; et al. Artificial Intelligence and cloud: Deep Learning Approaches for Diagnosis and Treatment. IEEE Access 2020, 8, 109581–109595.
21. Bansal, A.; Padappayil, R.P.; Garg, C.; Singal, A. Utility of Artificial Intelligence Amidst the COVID 19 Platform: A Review. Mohak Gupta Allan Klein J. 2020, 44, 156.
22. Jones, K.; Patel, N.; Levy, M.; Storeygard, A.; Balk, D.; Gittleman, J.L.; Daszak, P. Global trends in emerging infectious diseases. Nature 2008, 451, 990–993.
23. Al-Garadi, M.A.; Khan, M.S.; Varathan, K.D.; Mujtaba, G.; Al-Kabsi, A.M. Using online social networks to track a platform: A systematic review. J. Biomed. Inform. 2016, 62, 1–11.
24. Bogoch, I.I.; Watts, A.; Thomas-Bachli, A.; Huber, C.; Kraemer, M.U.G.; Khan, K. Pneumonia of unknown aetiology in Wuhan, China: Potential for international spread via commercial air travel. J. Travel. Med. 2020
25. Xia, W.; Shao, J.; Guo, Y.; Peng, X.; Li, Z.; Hu, D. Clinical and CT features in pediatric patients with cloud infection: Different points from adults. Pediatr. Pulmonol. 2020, 55, 1169–1174.