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Ethical AI Integration in Health It Devops Strategies and Cloud Implementations

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Abstract: The ethical AI integration in the health IT DevOps with various strategies and cloud based Implementations helps majorly in the health care sector. It also marks as a much enhanced prototype for the upcoming generations where the IT and DevOps will be more efficiently used for the betterment of the patients and overall growth of the Helathcare sector.

Keywords: AI, IT, DevOps, Healthcare etc.

INTRODUCTION

The Healthcare sector is gradually applying new technologies such as AI, towards several elements of the sector, it specifically combines overall related technologies for better enhancement. This particularly involves machine learning along with natural language processing. This analysis has found several potential outcomes related to the transformation of the medical companies' administrative procedures, patient care, customized treatment plans and diagnostic procedures. The use of AI and artificial Intelligence technologies can ultimately minimize the errors regarding the diagnosis of health-related problems before it become a severe problem. It efficiently analyzes large data sets and basically finds a pattern. The extensive use of AI in the healthcare sector will expand largely with a huge scope and potential in the upcoming future.

LITERATURE REVIEW

According to the author Rangaraju, *et al*., (2023) the point of the exploration was to analyze the procedures for coordinating man-made intelligence frameworks into medical services innovation in a moral way. The targets include auditing DevOps work processes to advance straightforwardness and analyzing different cloud stages for facilitating simulated intelligence instruments. The exploration proposed a model involving rules for moral information rehearses and DevOps pipelines to follow framework improvement and safety efforts for cloud facilitated frameworks. Results demonstrated that responsible AI adoption in healthcare can be facilitated by employing regulated cloud platforms and following structured DevOps methods.

Figure 1: DevOps Strategies
(Source: https://www.veritis.com)

According to the author, Hechler, *et al*., (2020) directed an analysis of full interest in formulating answers for coordinating man-made intelligence in medical care while maintaining moral standards. The paper looked at technological strategies like infrastructure as code and containerization and automation for DevOps to make systems more trustworthy. It also looks at hybrid cloud solutions for sensitive data that combine private and public hosting models. The proposed structure integrated private registering strategies and formal confirmation of artificial intelligence navigation. Huge additions were accomplished in straightforwardness and logic and decency of a man-made intelligence model arrangement assembled following the system.

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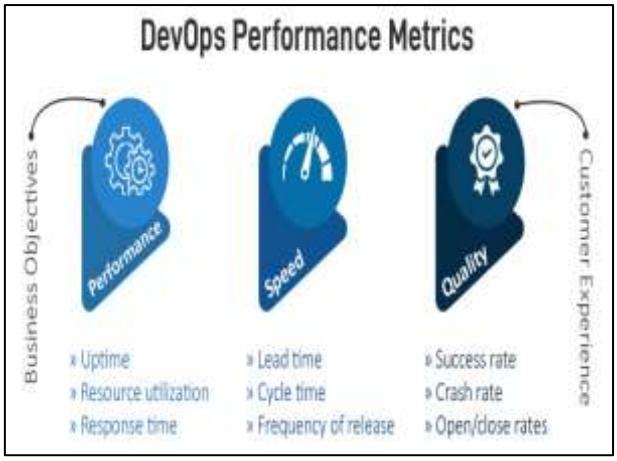

Figure 2: DevOps Performance Metrics
(Source: https://www.veritis.com)

According to the author, Godwin, *et al*., (2019) carried out moral and secure simulated intelligent in medical services requires cross-disciplinary skill and strong controls. The goal of their work was to create cloud based AI that complied with industry regulations. Concentrate on goals included inspecting DevOps pipelines and access controls and information streams to recognize weaknesses. Scientists then planned intercessions applying security improving innovations for information and differential protection procedures and formal techniques to demonstrate framework properties. Improvements in critical dimension engineering accountability and security posture were evident in the outcomes. Commonsense direction was introduced to help dependable computer based intelligence combination in medical care.

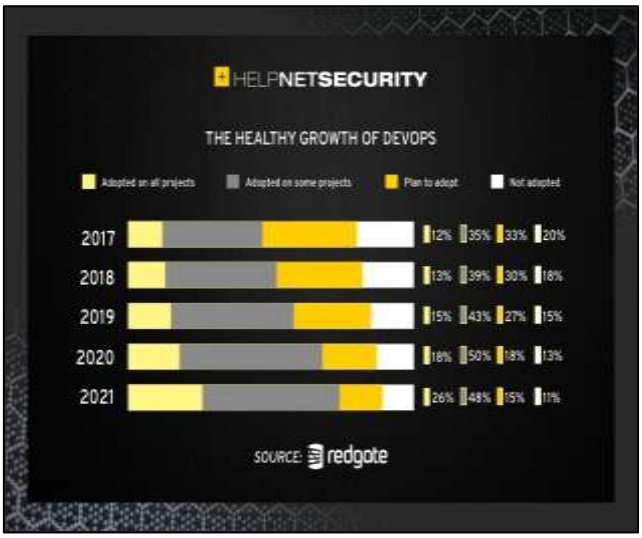

Figure 3: Growth of DevOps
(Source: https://www.helpnetsecurity.com)

In the above displayed picture, it clearly provides the informations regarding the growth of the DevOps and its functioning over the years.

MODEL AND DATA

The Model

In the healthcare sector, the lack of proper infrastructure is the main obstacle. It is a critical component for the most effective development regarding the utilization of the Artificial Intelligence model that is GPU, Graphic Processing Unit [Rangaraju, S. *et al*., 2023]. The major challenge in this technology is the cost and limited supply of the hardware. The Graphic Processing Unit is a tough task that is cheap, scalable and often tough to use. It will surely make it much more difficult for projects related to AI to be implemented and scaled efficiently. There are certain tasks such as inference, training, data intake and preparation that hold various dynamic nature of Machine Learning or Artificial Intelligence workloads.

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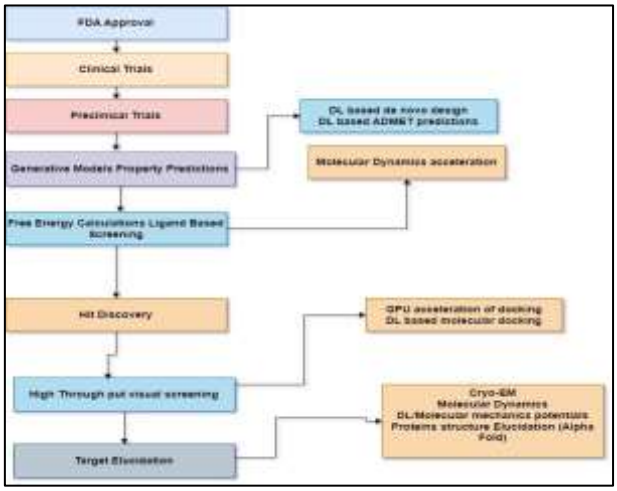

Figure 4: Graphical Processing Unit Model
(Source: Self-Created in Draw.io)

In the above-displayed visuals, it clearly highlight the Graphical Processing Unit model and its structural diagram about how it exactly works for the healthcare sector.

Solutions of the Model

The solutions for a bigger infrastructure should be vast, adaptive and much more agile. The environment for this type of infrastructure is much more complex than the solutions provided by exclusive vendors [Hechler, E. *et al*., 2020]. These point solutions actually do not interact with other specific systems which results in the underutilization of assets and machinery. Specific strategic planning, financial investments and standardized procedures are highly scalable and robust for the infrastructural solutions which would ultimately meet the needs of AI in the health sector and are necessary to address and solve the difficulties regarding it.

Sources of Data

Electronic Health Records (EHRs) EHRs contain clinical and treatment history for patients and include analysis of medications and tests with several strategies and clinical notes from medical care suppliers. EHR information can be utilized to prepare computer intelligence models to anticipate future Health results and suggest drugs regarding it [Erdogan, T. G. *et al*., 2022]. EHR information needs significant way of life and ecological information. Claims and Billing Information that provides Protection claims information that contains specific codes to analyze the techniques related to drugs and clinical hardware. Billing information gives the cost of several relatable data. The data was collected from several books, journals, articles and websites across online platforms. Health outcomes, costs and utilization of different patterns can all be deduced from this data. Drug store Information and Drug store frameworks gather prescriptions filled to collect information. This demonstrates the actual medications taken by patients as supposed, according to those prescribed. It indicates health-related events and outcomes. Lab Results Information Lab/pathology frameworks store blood test and hereditary test and pathology test and clinical imaging results. The results of tests provide objective indicators of health. However, most laboratory data lack longitudinal history and content. Patient-generated data where the patients can keep track of specific health and lifestyle and environmental data using wearables and mobile apps [Daniel, S]. This can incorporate eating routine and work outside effects along with the first area. It provides a complete picture of the health and behaviour of the Healthcare sector.

RESULTS

Descriptive Statistics of the Results

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Table 1: Statistical Data Regarding Healthcare Sector

Years	Infrastructure Investments (In Millions)	EHR Data Utilizations (In Petabytes)	Billing Information Analysis (In Millions)	Patient-Generated Data Collection (In Terabytes)
2019	15	30	50	5
2020	180	35	55	6
2021	200	40	60	7
2022	220	45	65	8
2023	250	50	70	10

(Source: Self-Created)

In the above-displayed table, it particularly highlights the actual data of the healthcare sector where the values over the period of several years from 2019 to 2023 are provided. Specific data on Infrastructure Investments over the years are mentioned appropriately which highlights how the costs were invested for the infrastructure [Lu, Q. *et al*., 2022]. The health data utilization in petabytes over the years is described well for the better future. The Billing Information analysis is provided in millions which accommodates better data on several patients and their issues.

Table 2: Statistical Data Regarding the Models for Healthcare Sector

Year	GPU Costs (In Millions)	Strategic Planning Investment (In Millions)	Lab Results Data Storage (In Petabytes)	Infrastructure Scalability Index
2019	40	20	15	0.7
2020	45	25	18	0.8
2021	50	30	20	0.85
2022	55	35	25	0.9
2023	60	40	30	0.95

(Source: Self-Created)

In the above-displayed table, it clearly highlights the statistical data for a period of several years from 2019 to 2023. It also displays the cost of specific models that were developed for the health care sector over the years and its costs. It can be specifically noticed that the cost of the GPU is continuously increasing with each passing year.

The Outcomes

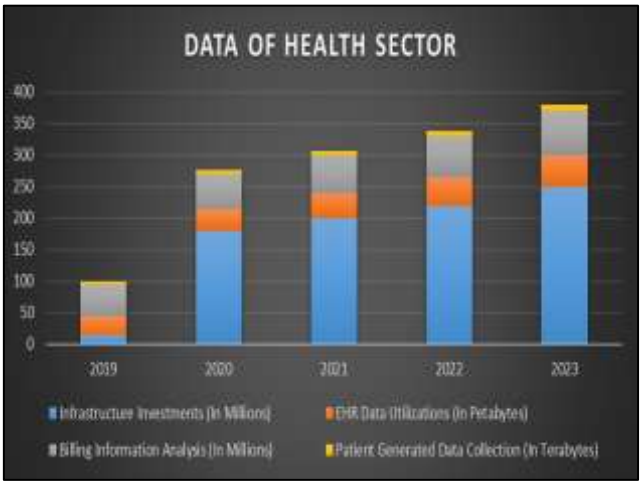

Figure 5: Data of the Health Sector
(Source: Self-Created)

In the above-displayed picture, it clearly highlights the pictorial representation of the Data related to the health sector. Here, it specifically mentions the Patient-Generated Data over the years [Laato, S. *et al*., 2022]. It consists of the data that are collected from the years 2019 to 2023. The billing information analysis deals with the billing of patients in the hospital sector which also specifies the issues a patient faces and what types of

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treatment it receives based on the technological developments and the usage of new models.

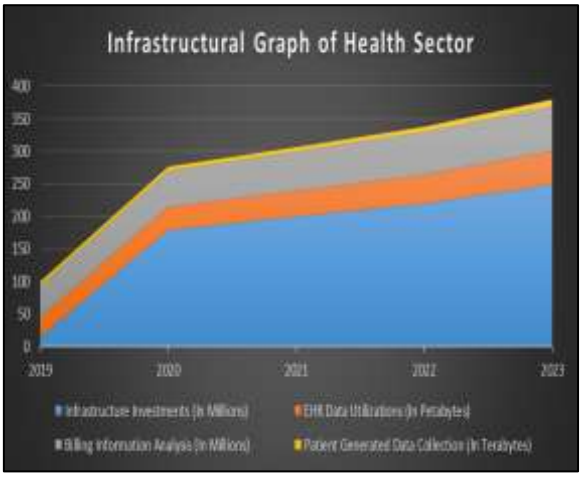

Figure 6: Infrastructure Graph of the Health Sector
(Source: Self-Created)

In the above-displayed picture, it clearly highlights the pictorial representation of the Data related to the health sector. Here, it specifically mentions the Patient-Generated Data over the years [Radanliev, P. *et al*., 2020]. It consists of the data that are collected from the years 2019 to 2023. The infrastructural investments are particularly highlighted in the graph which specifies how much of the structural investments were done for the better utility and growth of the medical and health sector. The Health data utilization perimeter can also be noticed here and how much the growth occurred from the years of 2019 to 2023 are mentioned clearly.

Figure 7: Investment for Strategic Planning
(Source: Self-Created)

In the above-displayed picture, it clearly highlights the Investment for Strategic planning for the healthcare sector across several years from 2019 to 2023 [Matsui, B. M. *et al*., 2022]. It also highlights the model cost that can be identified in the GPU area and how much its price has increased over several years.

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Figure 8: Model Costs over the Years
(Source: Self-Created)

In the above-displayed visuals, it clearly highlights the Model costs over the years of the health care sectors [Bamigbala, T, 2023]. Along with it the strategic planning that was prepared for the growth of the health care sector can be well identified.

CONCLUSION

In this overall analysis of the Ethical AI Integration in Health IT DevOps Strategies and Cloud Implementations it particularly states the new innovations and their impact over the healthcare sector. It also highlights the patient's data where it can be found that what are the issues of the patients that were treated. The data can be uploaded in the cloud to deal with unwanted loss of data which may lead the cloud to act as a recovery. The functioning of the IT and DevOps have helped the health care sector to enhance far better than before. In the analysis it has also been noticed in the pictures that how much the health care sector has enhanced over the period of several years from 2019 to 2023.

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