Pet Animal Disease Prediction Using Machine Learning Algorithm

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Abstract- *The main objective of the project is to identify and predict diseases in pet animals based on their symptoms. Disease Prediction is a Machine Learning based system which primarily works according to the symptoms given by a user. The disease is predicted using algorithms and comparison of the datasets with the symptoms provided by the user. Predicting animal diseases is a really important topic because it helps us keep our pet animals healthy and safe. In this project Decision Tree Algorithm is used as a predictive tool to predict disease from pet animal. By leveraging the Decision Tree Algorithm, we aim to enhance the accuracy and reliability of our predictions. The system processes the symptoms provided by the user as input and gives the output as the probability of the disease. Additionally, the project implements our pet animal disease prediction system on a website using tools like FLASK to build the site.*

Keywords- Disease Prediction, Machine Learning, Pet Animals, Symptoms,Decision Tree Algorithm, Reliability, Probability, Website, Flask.

I. INTRODUCTION

The work that is proposed in this paper focus towards leveraging advanced data mining techniques to forecast diseases afflicting our beloved pets. Just as the heart serves as the linchpin of human physiology, ensuring vitality and health, so too do animals rely on their well-being for a thriving existence. Any ailment in our pets can reverberate distressingly throughout their bodies, underscoring the critical importance of proactive healthcare measures.The realm of veterinary medicine faces unique challenges, with accurate diagnosis and timely intervention being paramount for ensuring the health and longevity of our animal companions. Our project, rooted in the ethos of preventive care, seeks to harness the power of machine learning algorithms, notably the Decision Tree Algorithm, to predict diseases based on symptomatic manifestations provided by pet owners. By empowering individuals with the ability to foresee potential health issues in their pets, we aim to foster early intervention and preventive measures, ultimately safeguarding their well-being.The significance of our endeavor extends beyond the realm of animal welfare, resonating with broader public health concerns. Just as certain diseases can pose risks to humans through zoonotic transmission, proactively managing and preventing ailments in animals can mitigate these risks, fostering a safer and healthier environment for all.In a healthcare landscape characterized by evolving challenges, our project stands as a beacon of innovation, offering a user-friendly web-based platform built on robust frameworks like FLASK. Through seamless integration of technology and veterinary expertise, we endeavor to democratize access to predictive analytics in animal healthcare, empowering pet owners and veterinarians alike to make informed decisions and take proactive measures towards ensuring the well-being of our cherished companions.

GENERAL

Pet animal disease prediction is an exciting field that aims to predict and prevent disease outbreaks in pet animals. This early detection helps veterinarians and animal health professionals take proactive measures to protect animal populations and prevent the spread of disease. Animals generally show clinical signs only when the disease is advanced, so early detection and prevention are important.

II. LITERATURE SURVEY

Karthick B, Dr. Manjunath M , Assistant Professor conducted a project on the **Animal Health Monitoring using Machine Learning**, which was published in the year (2021) in the International Journal of Creative Research Thoughts (IJCRT)

Prof Kalpna Saharan ,Arangale Tejas, Gadhe Harshali ,Shelke Samiksha ,Ambedkar conducted a project on the **A Comprehensive Survey Of Machine Learning Techniques In Animal Disease Prediction Using ML**, which was published in the year (2023) in the International Journal of Creative Research Thoughts (IJCRT).

Vivek Sharma, Vaibhav Sharma, Gaurav Sharma, Gagan Kaushik conducted a project on the **Disease Prediction**

Using Machine Learning, which was published in the year (2022) in the International Journal of Research in Engineering, Management, and Technology Sciences (IJREMETS).

Shraddha Patil, Akshata Masmardi , Vedika Phalle, Mayuri Yamagar , Prof. A.P. Chougule conducted a project on the **Livestock Disease Prediction Using Machine Learning**, which was published in the year (2023) in the International Journal of Research in Engineering, Management, and Technology Sciences (IJREMETS).

III. PROPOSED SYSTEM

Our proposed system will predict the pet animal disease using Decision Tree algorithm based on the symptoms user given. And also provide the precautionary measures on the basis of disease predicted. Pet animal disease Prediction is a Machine Learning based system which primarily works according to the symptoms given by a user. The disease is predicted using algorithms and comparison of the datasets with the symptoms provided by the user.

Advantages of the proposed system

- The main advantages of this project is to reduce the death rate of animals.
- To identify and detect diseases in animals at an early stage, allowing for timely prevention and treatment, thus minimizing the severity and spread of diseases
- This system enhances the quality of healthcare.
- Pet animal disease prediction aim to improve   pet animal health, welfare, and productivity, while also protecting human health.

IV. METHODOLOGY

Machine Learning

Machine Learning is the field of study which deals with making computers learn and perform tasks without explicitly programming them. When it comes to building a ML model, it basically consists of two phases training and testing. In training phase, we make the machine learn using training data, once trained, the model is tested against the new data so as to measure its performance. Machine learning is further broadly categorised into supervised and unsupervised. In supervised machine learning the model is trained using labelled dataset where as in unsupervised the model itself learns by recognising patterns in the data.

Decision Tree

A decision tree classifier is a fundamental algorithm in machine learning used for both classification and regression tasks. It operates by recursively partitioning the input space into regions, each associated with a particular class label or target value. At each step of the partitioning process, the algorithm selects the feature that best separates the data into distinct classes or groups. This selection is based on metrics such as Gini impurity or information gain, which quantify the purity or homogeneity of the resulting partitions. The process continues until a stopping criterion is met, such as reaching a maximum tree depth or when further partitioning does not significantly improve the model's performance. Decision trees offer several advantages, including interpretability, ease of understanding, and the ability to handle both numerical and categorical data. However, they are prone to overfitting, especially with complex datasets, which can be mitigated using techniques like pruning or ensemble methods such as random forests or gradient boosting. Overall, decision tree classifiers provide a versatile and intuitive approach to solving classification problems in machine learning.

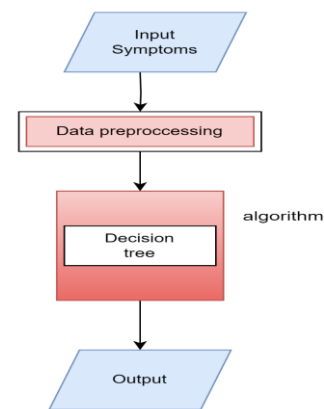### V. DEVELOPMENT PROCESS

a)   FLOW CHART

Fig1.1

In fig 3.1, The flowchart illustrates the sequential steps involved in the prediction process, starting from symptom input to disease prediction.
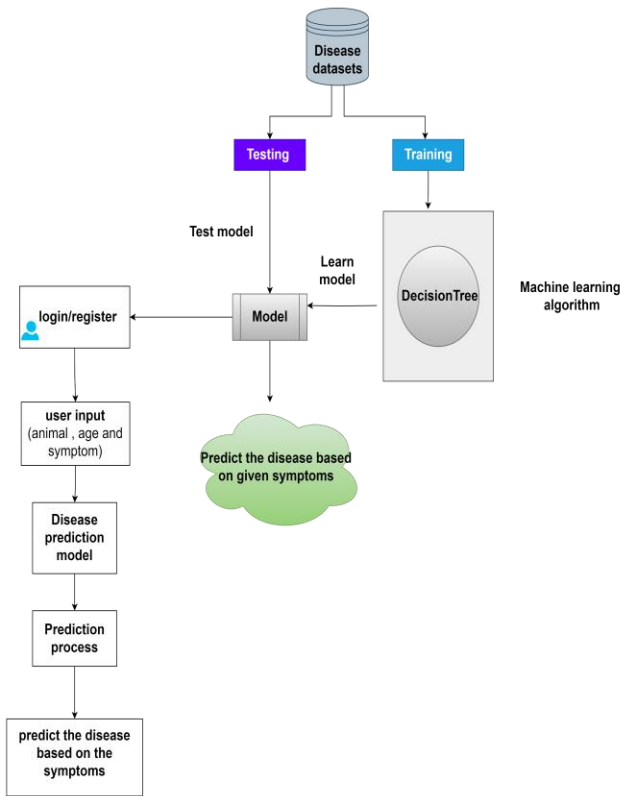
b)   ARCHITECTURE DESIGN

Fig1.2

In fig 3.2, The architecture diagram for the pet animal disease prediction project illustrates a cohesive system comprising three primary components: the user interface, the predictive model, and the decision-making process. At the forefront is the user interface, providing a user-friendly platform for pet owners or veterinarians to input four symptoms observed in the animal. These symptoms serve as the foundation for the predictive model, situated centrally within the architecture. Trained on a comprehensive dataset, the model employs the decision tree algorithm to analyze symptom data and predict potential diseases affecting the pet.
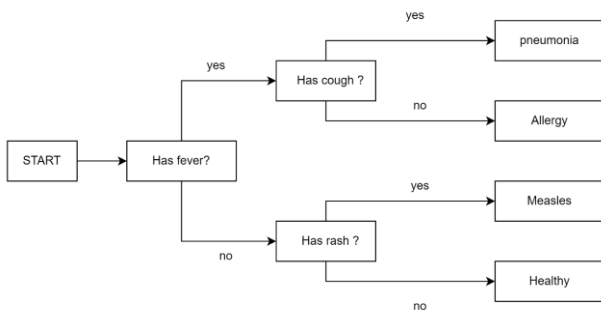
c)   DIAGRAM FOR DECISION TREE

Fig1.3

In fig 3.3, the decision tree diagram visually represents the hierarchical structure of the decision-making process, showing how the model assesses each symptom to arrive at a final prediction.

VI. RESULT

The overall disease prediction system performs supervised learning algorithm which is the crux of the system. The user needs to login first and enter the animal name, age then the five symptoms. Disease will be thrown as output based on those symptoms; List of symptoms is divided into levels based on the nature of disease. Model is revolved around Decision tree algorithms. Algorithm will be called when user hit the predict button.
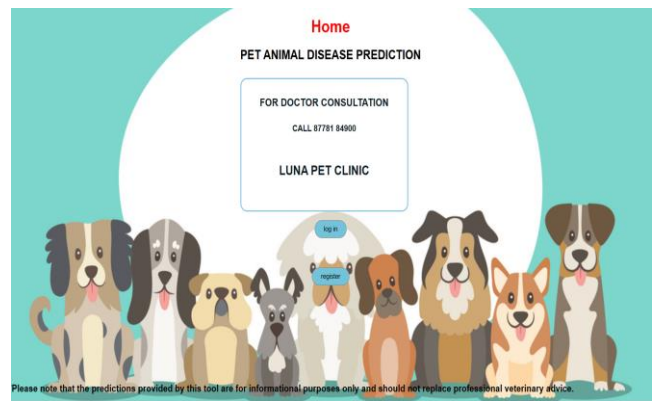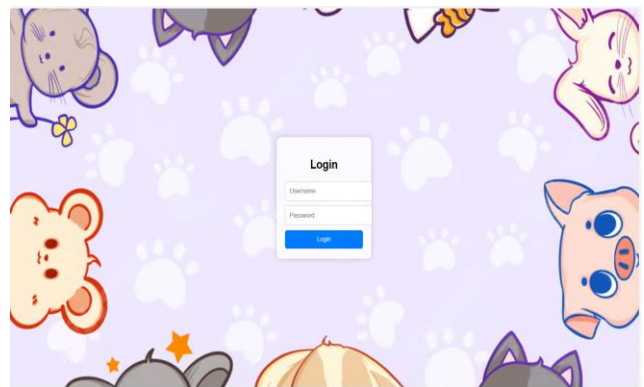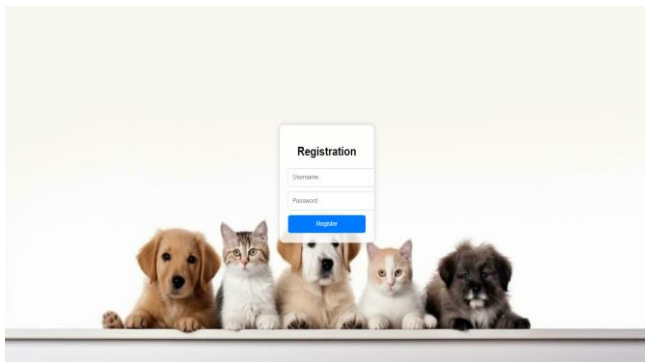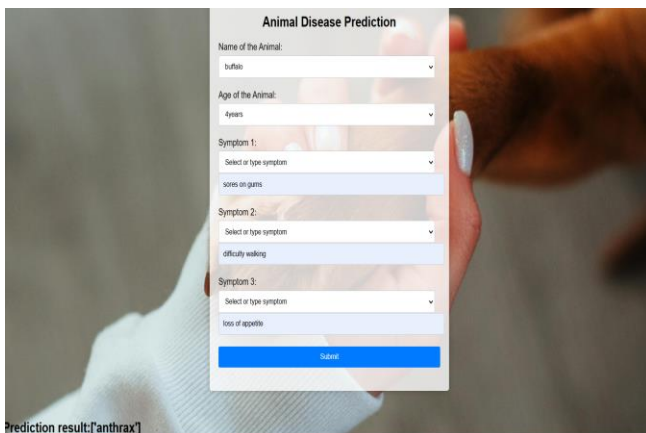

Fig1.4

HOME-PAGE

Fig1.5

LOGIN-PAGE

Fig1.6

REGISTRATION-PAGE

Fig1.6

PREDICTION-PAGE

VII. CONCLUSION

All the main points of the research work are written in this section. Ensure that The machine learning algorithms is used to predict the disease among pet animals. The dataset contains the various symptoms and the name of the diseases based on the symptoms. The proposed system will be helpful for the pet's owners to identify the diseases among livestock based on the symptoms observed by them. They don't have to search for the precautionary measures to be taken as this system will provide it based on the disease predicted.

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