

MULTI-DISEASE PREDICTION SYSTEM

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Abstract

Chronic Kidney Disease (CKD), Heart Disease, and Cervical Cancer are among the leading health challenges globally. Early detection and prevention are vital to reduce morbidity and mortality. However, traditional diagnostic processes are often resource-intensive and time-consuming, making it challenging to reach underserved populations. This project proposes a **Multi-Disease Prediction System** that leverages machine learning models to efficiently and accurately predict the likelihood of these diseases based on patient data.

Objectives:

- Build a model for each disease, evaluate their performance, integrating them on a interactive UI.
- Provide awareness blogs about those diseases on the same UI.

Abstract

Methods/sources of research:

The Internet, Research Papers, Blogs, ChatBots, etc.

Gaps in previous researches:

- Failure to train models effectively.
- Models being too simple, leading to low performance scores.
- Usage of outdated stacks to build the web application.
- No database integration with the previous web applications.
- No relevant information about the diseases like how to suspect them, etc.

Abstract

This research has helped find out that though doctors can prescribe decisive tests for a disease, prescribing the tests for those who don't actually have the disease wastes resources, plus there's a chance of occurrence of false positives, and that ML can be used to develop predictive models to predict the diseases beforehand based on the prior health condition and some medical reports (blood reports, urine reports, etc.) of the patient. The Multidisease Prediction System demonstrates the potential of leveraging machine learning to address critical health challenges. The modular nature of the system allows scalability to include additional diseases in the future. The project serves as a data-driven decision-making mechanism, in medical situations.

Introduction

- Chronic Kidney Disease (CKD), Heart Disease, and Cervical Cancer are life-threatening if not detected early. Traditional diagnosis is time-consuming, expensive, and often inaccessible in rural areas.
- A Multi-Disease Prediction System that uses machine learning to predict these diseases early. It is accessible via a simple and user-friendly web application.
- This system predicts the likelihood of: Chronic Kidney Disease (CKD), Heart Disease, Cervical Cancer.
- Using it supports clearing any doubts, early diagnosis and treatment, and reduces the burden on healthcare systems.
- It first collects patient data (age, health metrics, medical history), then runs the data through trained machine learning models. Finally displays prediction results to users.



Literature Survey

N o	Title	Authors	Journal Name & Year	Methodol ogy Adapted	Key Findings	Gaps
1.	Human Disease Prediction using Machine Learning Techniques and Real-life Parameters	K. Gaurav, A. Kumar, P. Singh, A. Kumari, M. Kasar, T. Suryawanshi	International Journal of Engineering (IJE) - 2023	Machine Learning Techniques	Various ML models can be made for disease predictions	Usage of models which are too simple and not that effective
2.	Multiple Disease Prediction using ML	K. Reshma, P. Niharika, J. Haneesha, K. Rajavardhan, S. Swaroop	Int. Research Journal of Modernization in Engg. Tech. And Science (IRJMETS) - 2024	An Interactive User Interface	A user interface integrating those multiple disease prediction models under one web app	Usage of old and outdated libraries, no database integration, low model performance

Literature Survey

N o	Title	Authors	Journal Name & Year	Methodol ogy Adapted	Key Findings	Gaps
3.	Disease Prediction using ML	Nidhi K., Pallavi B., Poonam K., Prachi G., Pradnya B., Pranjali J.	Inst. Of Electrical and Electronics Engineers (IEEE)	ML Models for Disease Prediction	Specific ML models can be developed based on the use case	Poor performance metrics, no UI at all
4.	ML for Multiple Disease Prediction	K. B. Singh, A. Sharma, A. Verma, R. Maurya, Dr. Y. Perwej	Int. Journal of Scientific Research in CS, Engg. and IT (IJSRCSEIT) - 2024	A model per disease can be used	Different ML models were trained and tested against different diseases	Limited models for 3 diseases, and no awareness blog of any sort

Literature Survey

N o	Title	Authors	Journal Name & Year	Methodol ogy Adapted	Key Findings	Gaps
5.	ML Approaches for Disease Prediction	S. Yadav, V. Jaglan, Y. Singh	Inst. Of Electrical and Electronics Engineers (IEEE)	Multiple diseases have been described	Various models can be tested for each disease and the best one is chosen	No discussion of Recall score, no UI

Proposed System

- A proposed system for this problem involves training, testing, and picking the best Machine Learning Models for each disease, namely Chronic Kidney Disease (CKD), Heart Disease, and Cervical Cancer. These models will be developed in Python, using its extensive Machine Learning and Data Manipulation libraries.
- And then developing an interactive web-based application using the following tech stack:
 - i. HTML, CSS, and JS for the Frontend
 - ii. Django (with Python) for the Backend
 - iii. Django's built-in SQLite3 database
- Integrating the website with relevant awareness blogs with information such as:
 - i. How to prevent those diseases
 - ii. Symptoms of each disease
 - iii. What the actual diagnosis method is, and how does our system help the user

References

- [4]. K. B. Singh, A. Sharma, A. Verma, R. Maurya, Dr. Y. Perwej, “ML for Multiple Disease Prediction”, Int. Journal of Scientific Research in CS, Engg. and IT (IJSRCSEIT) – 2024.
- [5]. S. Yadav, V. Jaglan, Y. Singh, “ML Approaches for Disease Prediction”, Inst. Of Electrical and Electronics Engineers (IEEE)

References

- [1]. K. Gaurav, A. Kumar, P. Singh, A. Kumari, M. Kasar, T. Suryawanshi, "Human Disease Prediction using Machine Learning Techniques and Real-life Parameters", International Journal of Engineering (IJE) – 2023.
- [2]. K. Reshma, P. Niharika, J. Haneesha, K. Rajavardhan, S. Swaroop, “Multiple Disease Prediction using ML”, Int. Research Journal of Modernization in Engg. Tech. And Science (IRJMETs) – 2024.
- [3]. Nidhi K., Pallavi B., Poonam K., Prachi G., Pradnya B., Pranjali J., “Disease Prediction using ML”, Inst. Of Electrical and Electronics Engineers (IEEE).

GitHub Dashboard

The screenshot shows the GitHub repository page for `k-venky/CSD_2021-25_B-04`. The browser tabs show the repository name and a notification that the user has been invited to the repository. The URL bar shows the repository path. The repository is private and has 1 watch, 0 forks, and 0 stars. The page features two main action cards: 'Start coding with Codespaces' and 'Add collaborators to this repository'. Below these, there is a 'Quick setup' section with a URL input field and a '...or create a new repository on the command line' section with a terminal snippet.

k-venky invited you to k-venky/CSD_2021-25_B-04

github.com/k-venky/CSD_2021-25_B-04

k-venky / CSD_2021-25_B-04

Type to search

Code Issues Pull requests Actions Projects Security Insights

You now have push access to the k-venky/CSD_2021-25_B-04 repository.

CSD_2021-25_B-04 Private

Watch 1 Fork 0 Star 0

Start coding with Codespaces
Add a README file and start coding in a secure, configurable, and dedicated development environment.
[Create a codespace](#)

Add collaborators to this repository
Search for people using their GitHub username or email address.
[Invite collaborators](#)

Quick setup — if you've done this kind of thing before
HTTPS SSH `https://github.com/k-venky/CSD_2021-25_B-04.git`
Get started by [creating a new file](#) or [uploading an existing file](#). We recommend every repository include a [README](#), [LICENSE](#), and [.gitignore](#).

...or create a new repository on the command line
`echo "# CSD_2021-25_B-04" >> README.md`

Any Queries?

Thank You!!!