**A**

**MINI PROJECT REPORT ON**

**“Diabetes Prediciton”**

**As Partial Requirement for the Degree of MASTERS OF SCIENCE (COMPUTER SCIENCE) (MSc. CS)**

**Submitted to**



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Success in such comprehensive project cannot be achieved single handed.it is team effort that sails the ship to the coast. So, we would like to express out sincere thanks to all the dignitaries who involved in making this project a great joy and turning it into successful piece of work.

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Thank You, Sincerely,

Disha Gupta Harshvardhan Kale

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**Introduction**

In an era where data-driven insights are transforming healthcare, our diabetes prediction project harnesses the power of machine learning to address the escalating challenges posed by diabetes. This initiative seeks to develop an efficient and accurate predictive model that identifies individuals at risk of developing diabetes, allowing for timely interventions and personalized healthcare strategies. Through the fusion of advanced algorithms and diverse datasets encompassing demographics, lifestyle factors, genetics, and clinical history, our project aims to contribute to the evolution of preventive healthcare. This report provides a concise overview of our approach, methodology, and outcomes, highlighting the potential of machine learning in revolutionizing diabetes prediction and proactive healthcare management.

**Project Scope**

Early Detection and Prevention

Health Awareness

Reduced Healthcare Burden

Personalized Recommendations

Collaboration with Healthcare Professionals

**Objectives**

1. Identify individuals at risk of developing diabetes at an early stage through predictive modeling.
2. Empower users with knowledge about their potential risk factors and encourage proactive health management.
3. Develop an intuitive and user-friendly interface to make the prediction tool accessible to individuals with varying technical expertise.

**Project Profile**

* **Technology :**

Machine learning, Flask , Html, Css, Python.

* **Front End :**

Html,Css

* **Back End :**

Python

**Project Category**

* This project involves the development of a technology solution aimed at improving health outcomes by predicting and preventing the onset of diabetes. It aligns with the broader category of healthcare technology.
* The core functionality of our project is based on predictive analytics—using historical and current data to forecast future outcomes. In this case, predicting the likelihood of an individual developing diabetes.
* The deployment of the machine learning model through Flask involves web application development. This category encompasses the creation of interactive interfaces, data handling, and user experience design.
* This project contributes to the domain of preventive healthcare. By predicting diabetes risk, it enables individuals to take proactive measures, fostering a preventive approach to health management.
* Given the use of machine learning algorithms and the emphasis on data-driven predictions, our project aligns with the field of data science. It involves collecting, preprocessing, and analyzing data to derive meaningful insights.
* The focus on creating a user-friendly interface and providing actionable recommendations places our project within the category of user-centric design. It emphasizes the importance of user experience and engagement.
* As part of the broader digital health landscape, our project contributes to the integration of technology into healthcare practices. It aims to leverage digital tools for health monitoring and prediction.

**Environment Description**

* **Hardware Requirement :**

Client-Side Hardware Requirements

|  |  |  |
| --- | --- | --- |
| Sr. No | Hardware | Requirement |
| 1. | Android Version | 9.0 |
| 2. | RAM | 4 GB |
| 3. | Storage | 100 MB |

* **Software Requirement :**

Software Requirements for developing the Mobile Application.

|  |  |
| --- | --- |
| Operating System | Windows 10/ 11 |
| Software | Android Studio |
| RAM | 16 GB |
| Storage | 250 GB |

**Analysis Report**

* **Current System :**
* It's important to note that the specific tests recommended may vary based on factors such as age, symptoms, risk factors, and the type of diabetes suspected. Diagnosis and management should be done in consultation with a healthcare professional who can interpret the results and provide appropriate guidance and treatment. Regular monitoring is crucial for managing diabetes effectively.
* The following are the reasons why the current system should be computerized:

1. Early Detection
2. Continuous Monitoring
3. Integration with Digital Health Platforms

* **Limitations of Current System:**
* **Time Consuming:**
* As the records are to be manually maintainedit consumes a lot of time.
* **Paper Work:**
* Lot of paper work is involved as the records are maintained in the files & registers.
* **Storage Requirements:**
* As files and registers are used the storage space requirement is increased.
* **Less Reliable:**
* Use of papers for storing valuable data informationis not at all reliable.
* **Accuracy:**
* As the system is in manual there are lot many chances of humanerrors. These can cause errors in calculating mechanism or maintaining patient details.
* **Difficulty In Keeping New Records:**
* It is difficult for keeping all the new entries of members, their account and transaction details.
* **Proposed System:**
* We introduced the new proposed system for reducing the limitations of the current paper-based system.
* The new system is totally based on the internet and it is paperless system means the data is storing on such database andtotally mobilebased system is introduced.
* In the new system there are basically two entities Trainer and Client.
* The proposed system is providing the client to get the diet and workout in one app. There the client has access to day wise workout and diet for weight gain or weight loss. They can even look at their BMI and work accordingly on their body.
* The trainer can change the diet and workout if the client is opting for a personal trainer so they get customised diet and workout.
* So, we identify the major difference is that, how convenient the proposed system than the current system.
* **Advantages of Proposed System:**

1. Early detection of individuals at risk of developing diabetes allows for timely intervention and preventive measures, potentially reducing the impact of the disease..
2. By focusing resources on individuals with a higher predicted risk, healthcare providers can optimize interventions and allocate resources more effectively.
3. Integration with continuous monitoring technologies enables real-time or near-real-time tracking of glucose levels, offering a more dynamic and comprehensive view of an individual's health.
4. The Flask web application offers a user-friendly interface, enhancing accessibility and promoting user engagement by facilitating easy data input and result interpretation.
5. The system can provide educational resources, fostering health literacy and helping users understand and manage their diabetes risk more effectively.Proposed system is very user friendly and much faster throughput than the current system.

**Analysis Report**

* **Data Flow Diagram :**

**Design Report**

**Future Enhancement**

In future, the designed system with the used machine learning classification algorithms can be used to predict or diagnose other diseases. The work can be extended and improved for the automation of diabetes analysis including some other machine learning algorithm.

**Conclusion**

* In conclusion, the diabetes prediction project represents a promising initiative harnessing machine learning and Flask technology to provide personalized risk assessments for individuals.
* The project's user-friendly interface, coupled with continuous monitoring capabilities, facilitates early detection and empowers users to take proactive steps towards preventive healthcare.
* The integration of diverse data sources and the exploration of wearable technology enhance the model's accuracy and relevance.
* The project evolves, ongoing collaboration with healthcare professionals, a commitment to user education, and a focus on privacy and security will be pivotal for its success.
* This project not only contributes to individual well-being but also holds the potential for broader public health impact.

**References**

**GIT LINK OF THE PROJECT**