



Council Of Science & Technology U.P.

Vigyan Bhawan 9,Nabiullah Road,Lucknow-226018

19/10/2024

CST UP Engineering Student's Project Grant Scheme

| | |
|--------------------------------|---|
| Applicant No | :: 202420251436 |
| Project Category : | :: Information Technology |
| Title of Project | :: HEALTH DIAGNOSTICS USING MACHINE LEARNING |
| Objectives of Project | <p>:: The objective of using machine learning in health diagnostics is to improve the accuracy and speed of detecting diseases and medical conditions. By analyzing large sets of medical data, machine learning algorithms can identify patterns and predict health issues early, supporting doctors in making better decisions. This approach reduces human error, enhances patient care, and allows for personalized treatments based on individual data. The goal is to create a more efficient, data-driven healthcare system that can diagnose conditions quickly and accurately, leading to better outcomes and overall health improvements for patients.</p> |
| Name of Guide(s) | :: Mr. ALOK KUMAR SRIVASTAVA |
| Name of College | :: BUDDHA INSTITUTE OF TECHNOLOGY |
| Address of College | :: GORAKHPUR UTTAR PRADESH 273209 |
| College Contact No. | :: 9554559900 |
| College Email ID | :: bit21it67@bit.ac.in |
| Brief Description Of Project | <p>:: The project Health Diagnostics Using Machine Learning aims to develop a system that uses advanced algorithms to assist in diagnosing diseases more quickly and accurately. By analyzing medical data such as patient history, lab reports, and imaging results, machine learning models can detect patterns that might not be easily noticed by doctors. This system will be able to predict the likelihood of a health condition and suggest possible diagnoses, acting as a supportive tool for healthcare professionals.</p> <p>Machine learning improves over time by learning from new data, which means that the more it is used, the better it becomes at detecting health problems. This project can help reduce misdiagnoses, shorten the time needed for diagnosis, and personalize treatments based on individual health data. Ultimately, the goal is to create a reliable, efficient, and cost-effective way to improve healthcare, benefiting both patients and doctors by providing timely and accurate health insights.</p> |
| Brief detail of the problem | <p>:: Yes, the project Health Diagnostics Using Machine Learning is related to local healthcare problems such as delayed diagnosis, limited access to specialized medical professionals, and overburdened healthcare systems. In many areas, especially rural or under-resourced regions, patients face long waiting times and misdiagnoses due to the lack of medical expertise. By implementing machine learning, this project can help bridge the gap by offering faster, more accurate diagnostics. This can lead to earlier treatments, improved patient outcomes, and a more efficient use of healthcare resources at the local level.</p> |
| Commercial Application Utility | <p>:: The project Health Diagnostics Using Machine Learning has commercial applications in telemedicine, diagnostic tools, and healthcare analytics. It can be integrated into medical software, mobile health apps, and wearable devices, providing real-time health monitoring, early diagnosis, and personalized care, enhancing patient outcomes and healthcare efficiency.</p> |

Remarks

:: The project has the potential to revolutionize healthcare by making diagnostics more accessible, accurate, and faster, ultimately reducing healthcare costs and improving patient care on a global scale.

DETAILS OF GROUP LEADER

| | | | |
|----------------|--------------------|--------------------|-------------------------|
| Group Leader | : AMIT KUMAR VERMA | Group Leader Email | ::kairati0553@gmail.com |
| Account Number | : 41473792897 | Account Type | ::SAVING |
| Branch | : ADB BAHRAICH | IFSC Code | ::SBIN0005977 |

| Name Of Students(Co-Applicant/s) | Enrollment Number |
|----------------------------------|-------------------|
| ADITYA PATEL | 210525013005329 |
| AMIT KUMAR VERMA | 210525013010863 |
| DIBYAM MALL | 210525013026670 |
| HIMANSHU SHARMA | 2105250130332796 |
| KHUSHI MADDHESHIYA | 210525013037050 |

Engineering Student's Program Details

| | | |
|------------------------------------|---|--|
| Member Type | :: GroupLeader |  |
| Applicant's Name | :: AMIT KUMAR VERMA | |
| Father's Name | :: Mr. RAVI PRATAP VERMA | |
| Correspondence Address with | :: Sector 5 D 61 Gida gorakhpur(273209) | |
| Permanent Address with | :: VILLAGE AND POST DEEHA DISTRICT BAHRAICH(271802) | |
| Mobile Number | :: 8932868785 | |
| Email ID | :: kairati0553@gmail.com | |
| Enrollment | :: 210525013010863 | |
| Percentage till 3rd Year | :: 77.00 | |
| Branch | :: INFORMATION & TECHNOLOGY | |
| Appearing Year | :: 4 | |
| Percentage Marks | :: I 76.88 | II Year: 75.67 |
| | | III 78.43 |

DECLARATION :-

I hereby solemnly affirm and state that the above project has/have been conceived by me and it is not a repetition of previous work.

Date :-

Place :-



Signature

**Signature with seal
Head of Department**

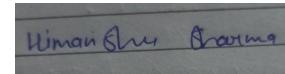
| | | |
|------------------------------------|---|--|
| Member Type | :: GroupMember |  |
| Applicant's Name | :: HIMANSHU SHARMA | |
| Father's Name | :: Mr. DEENANATH SHARMA | |
| Correspondence Address with | :: Sector 5 D 61 Gida gorakhpur :: Village and post deeha district bhabraich(273209) | |
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| Mobile Number | :: 9616316463 | |
| Email ID | :: himanshu961631@gmail.com | |
| Enrollment | :: 2105250130332796 | |
| Percentage till 3rd Year | :: 56.76 | |
| Branch | :: INFORMATION & TECHNOLOGY | |
| Appearing Year | :: 4tj | |
| Percentage Marks | :: I 60.16 II Year: 57.78 III 52.43 | |

DECLARATION :-

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Date :-

Place :-



Signature

**Signature with seal
Head of Department**

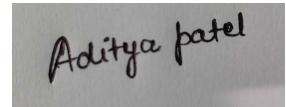
| | | |
|------------------------------------|---|--|
| Member Type | :: GroupMember |  |
| Applicant's Name | :: ADITYA PATEL | |
| Father's Name | :: Mr. AKHILESH PATEL | |
| Correspondence Address with | :: Sector 5 D 61 Gida gorakhpur :: Village and post deeha district bhabraich(273209) | |
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| Mobile Number | :: 9621642924 | |
| Email ID | :: adityapateljr1703@gmail.com | |
| Enrollment | :: 210525013005329 | |
| Percentage till 3rd Year | :: 60.02 | |
| Branch | :: INFORMATION & TECHNOLOGY | |
| Appearing Year | :: 4th | |
| Percentage Marks | :: I 57.00 II Year: 61.45 III 61.35 | |

DECLARATION :-

I hereby solemnly affirm and state that the above project has/have been conceived by me and it is not a repetition of previous work.

Date :-

Place :-



Signature

**Signature with seal
Head of Department**

| | | |
|------------------------------------|---|--|
| Member Type | :: GroupMember |  |
| Applicant's Name | :: DIBYAM MALL | |
| Father's Name | :: Mr. RAMESH MALL | |
| Correspondence Address with | :: Sector 5 D 61 Gida gorakhpur :: Village and post deeha district bhabraich(273209) | |
| Permanent Address with | :: Mishrauli rampur jungle khadda Kushinagar Uttar Pradesh 274801(274801) | |
| Mobile Number | :: 7521890187 | |
| Email ID | :: dibyammall48@gmail.com | |
| Enrollment | :: 210525013026670 | |
| Percentage till 3rd Year | :: 60.20 | |
| Branch | :: INFORMATION & TECHNOLOGY | |
| Appearing Year | :: 4th | |
| Percentage Marks | :: I 58.33 II Year: 59.72 III 62.48 | |

DECLARATION :-

I hereby solemnly affirm and state that the above project has/have been conceived by me and it is not a repetition of previous work.

Date :-

Place :-



Signature

**Signature with seal
Head of Department**

| | |
|------------------------------------|---|
| Member Type | :: GroupMember |
| Applicant's Name | :: KHUSHI MADDHESHIYA |
| Father's Name | :: Mr. JITENDRA MADDHESHIYA |
| Correspondence Address with | :: WARD NO. 03 AZAD NAGAR PIPIGANJ GORAKHPUR(273165) |
| Permanent Address with | :: WARD NO. 03 AZAD NAGAR PIPIGANJ, GORAKHPUR(273165) |
| Mobile Number | :: 7398165731 |
| Email ID | :: maddheshiyakhushi7@gmail.com |
| Enrollment | :: 210525013037050 |
| Percentage till 3rd Year | :: 70.09 |
| Branch | :: INFORMATION & TECHNOLOGY |
| Appearing Year | :: 4th |
| Percentage Marks | :: I 62.72 II Year: 69.83 III 77.51 |



DECLARATION :-

I hereby solemnly affirm and state that the above project has/have been conceived by me and it is not a repetition of previous work.

Date :-

Place :-

Signature

**Signature with seal
Head of Department**

CST, UP Engineering Students' Project Grant Scheme 2024-25

Undertaking of the Head of Department & Principal/Director

- 1- I/We do hereby solemnly affirm that the below mentioned applicant/s is/are bonafide student/s of our institute. The project submitted is not a repetition of previous work. This project has been reviewed primarily by me and is found appropriate to be submitted to CST, UP for consideration under CST, UP Engineering Students' Project Grant Scheme 2024-25. The project is novel and will be developed by him/her/them.

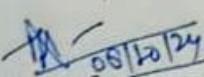
Group Leader Name **AMIT KUMAR VERMA**
Group Member 1 Name **HIMANSHU SHARMA**
Group Member 2 Name **DIBYAM MALL**
Group Member 3 Name **ADITYA PATEL**
Group Member 4 Name **KHUSHI MADDHESHIYA**

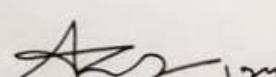
- 2- Name of the group leader (If the project is submitted by more than one students then grant shall be transferred in the account of group leader. The HOD/Head of the institution will nominate the Group Leader.) **AMIT KUMAR VERMA**.....

3. Guide Teacher Name & Email id : **ALOK KUMAR SRIVASTAVA**
Email id - **alokkumar302@bit.ac.in**

Date: **08/10/2024**

Place: **Gorakhpur.**


Signature of HOD
Head of Department
(with seal) Buddha Science Engineering
Buddha Institute of Technology
CL-1, Ses.-7, GIDA, Gorakhpur


Signature of
Principal/Director
(with seal)
Buddha Institute of Technology
CL-1, Ses.-7, GIDA, Gorakhpur

A project Presentation on

"HEALTH DIAGNOSTICS USING MACHINE LEARNING"

INFORMATION & TECHNOLOGY Department

Buddha Institute of Technology, GIDA,Gorakhpur

B.Tech,sesion:2024-25

Submitted By:

- 1.Aditya Patel
- 2.Amit Kumar Verma
- 3.Khushi Maddheshiya
- 4.Dibyam Mall
- 5.Himanshu Sharma

Under The Guidance of:

Alok Kumar Srivastava
Assistant Professor
Information Technology Department Buddha
Institute of Technology,Gorakhpur

INTRODUCTION



- Leverages advanced algorithms for analyzing medical data.
- Enables accurate predictions and early disease detection.
- Personalizes treatment plans based on patient data.
- Enhances diagnostic precision and reduces errors.
- Accelerates decision-making, improving patient care outcomes

OBJECTIVES

- Early Detection
- Personalized Treatment Plans
- Faster Processing of Medical Data
- Accurate Diagnosis
- Predictive Health Analytics
- Automation of Routine Tasks
- Cost – Effective Solutions





Preventive Care

- Early detection, personalized insights, improved health outcomes, continuous monitoring.

Disease Management



- Early disease detection through predictive modeling.
- Personalized treatment plans using patient data.



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Public Health Monitoring

- Real-time outbreak detection via data analysis.
- Predictive modeling for disease trend forecasting.
- modeling for disease trend forecasting.



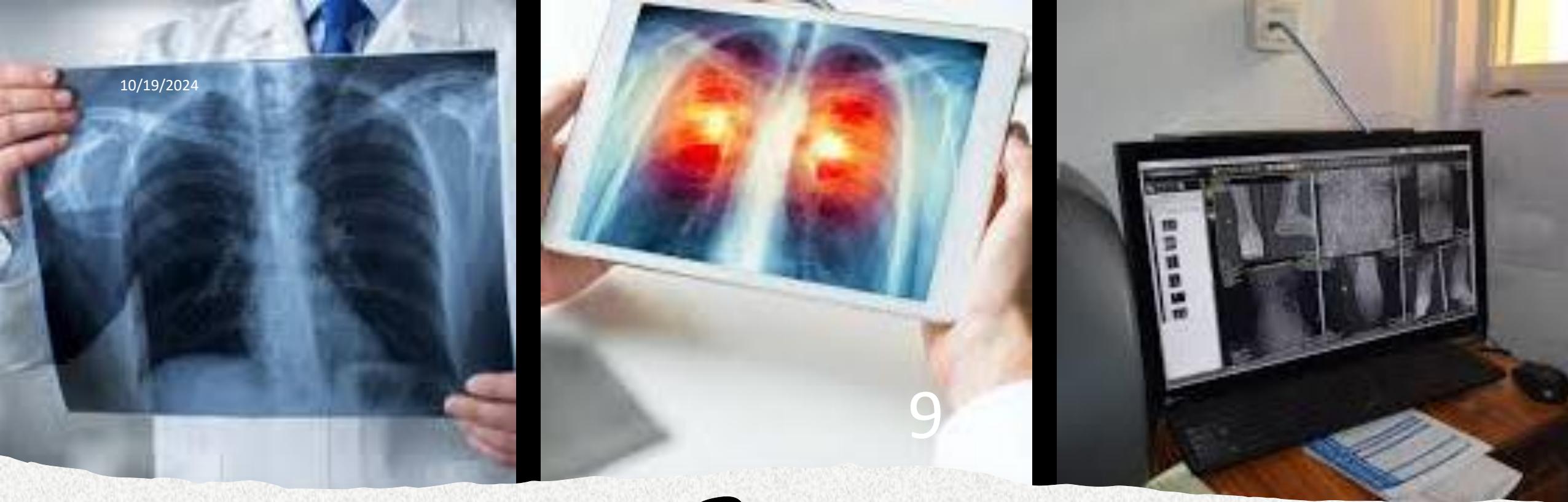
Personalized Medicine

- Tailored treatments based on genetic data.
- Personalized drug recommendations using algorithms.
- Predicting patient outcomes with machine learning.



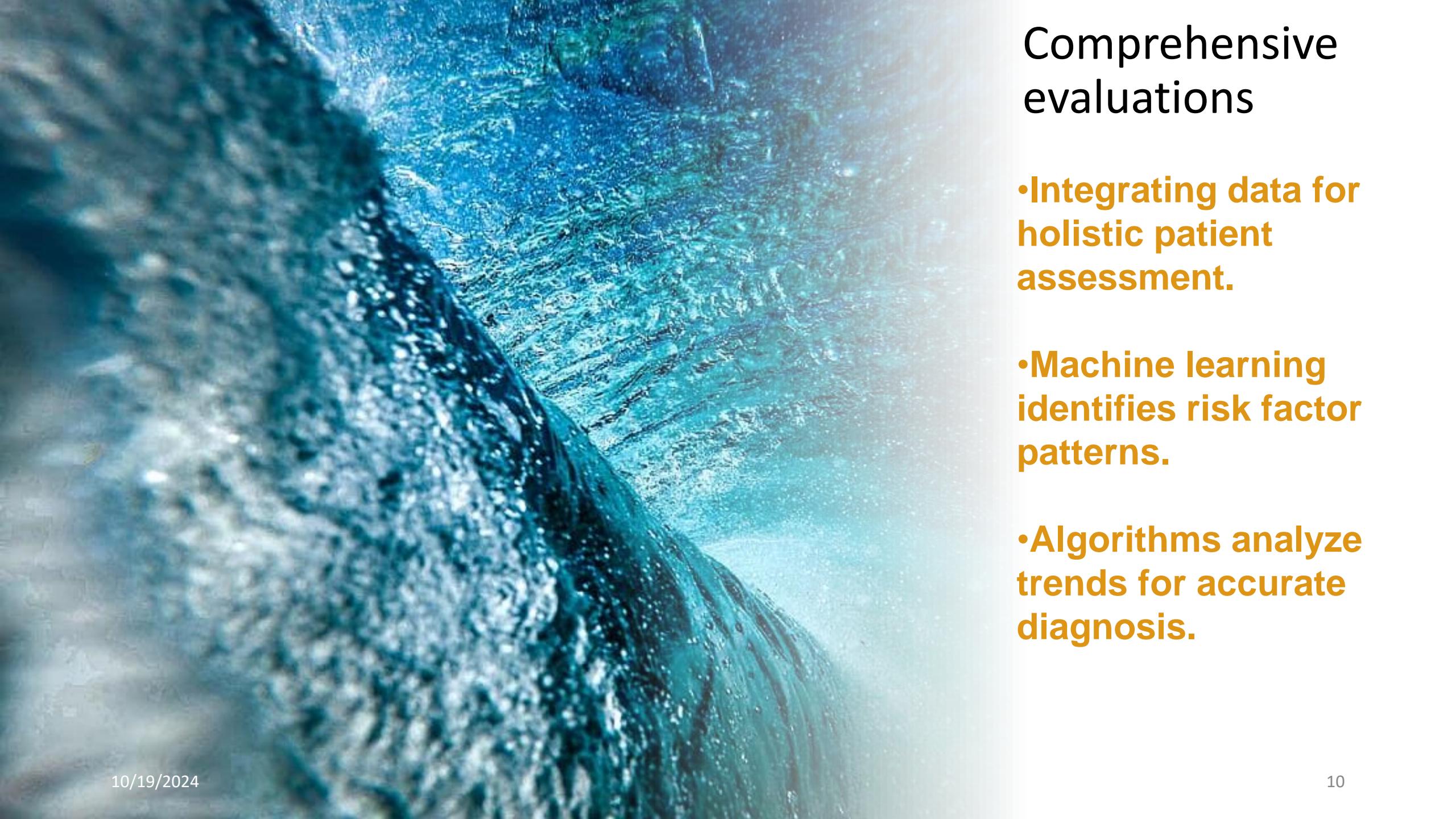
Techniques Used

- Support Vector Machines for classification.
- Neural networks for image analysis.
- Random Forests for predictive diagnostics.



Imaging

- Deep learning enhances image interpretation accuracy.
- AI detects anomalies in radiology scans.



Comprehensive evaluations

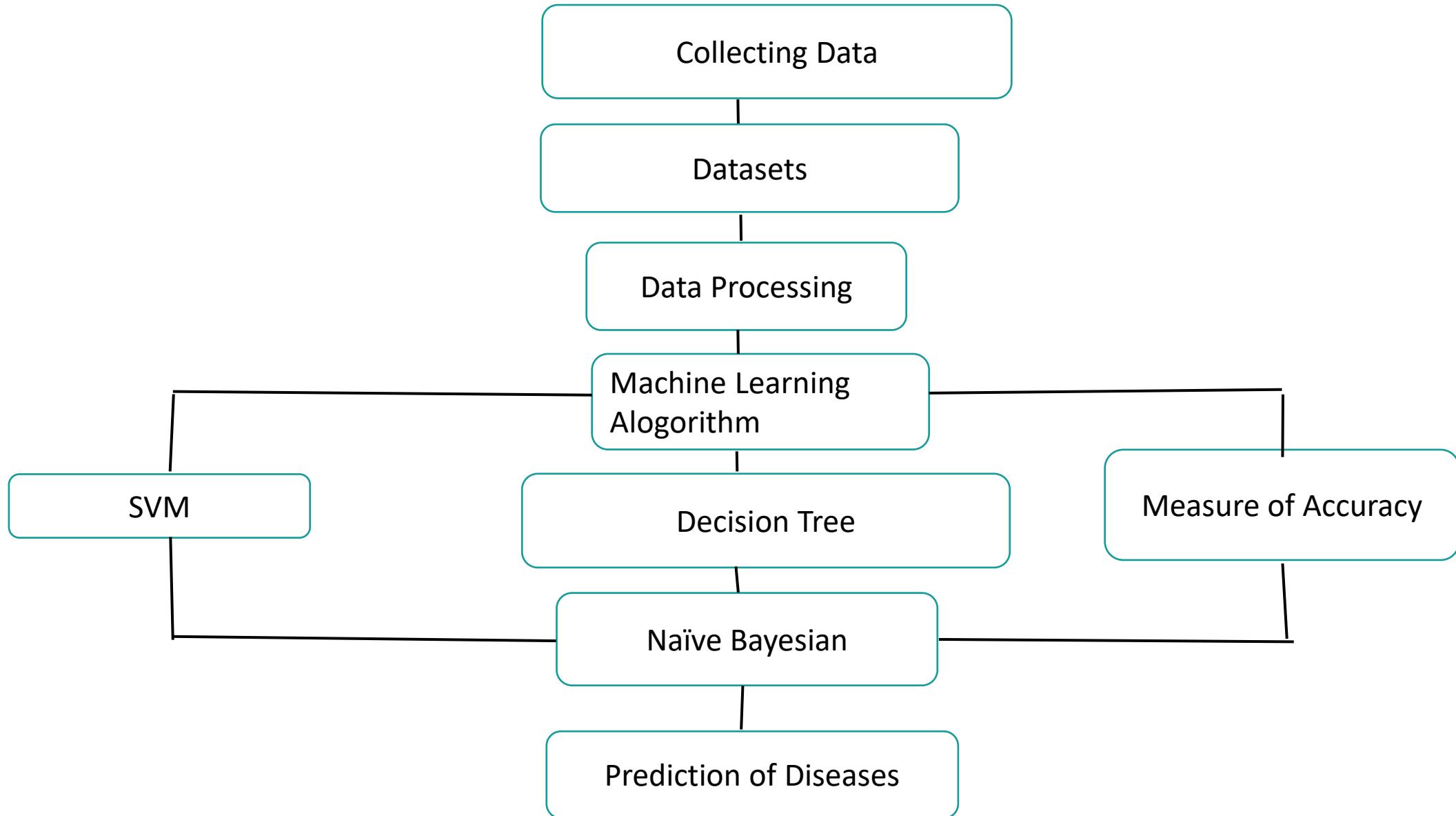
- Integrating data for holistic patient assessment.
- Machine learning identifies risk factor patterns.
- Algorithms analyze trends for accurate diagnosis.

Screening Tests



- Machine learning predicts disease screening outcomes.
- Automated analysis speeds up test results.
- AI enhances accuracy in screening tests.

Methodology



DATA COLLECTION:

**Patient
Data**

**Clinical
Data**

**Genetic
Data**

Future Outcomes

- AI enables earlier disease risk prediction.
- Personalized medicine improves patient treatment outcomes.
- Predictive analytics optimize healthcare resource allocation.
- Continuous monitoring enhances proactive health management.
- Machine learning refines diagnostic precision continually.

Importance of Diagnostics

Early detection improves patient survival rates.

Accurate diagnosis enables timely medical intervention.

Reduces misdiagnosis through data-driven analysis.

Identifies disease patterns for preventive care.

Optimizes treatment plans based on insights.



References

- **Deep Learning for COVID-19 Detection:**

Apostolopoulos, I. D., & Mpesiana, T. A. (2020). "COVID-19: Automatic detection from X-ray images utilizing transfer learning." *Physical and Engineering Sciences in Medicine*, 43(2), 635-640.

[Link to paper](#)

- **Predictive Models for Heart Disease:**

Kwon, J. M., & Kim, J. H. (2020). "Predictive modeling of heart disease using machine learning: A systematic review." *Healthcare*, 8(4), 554.

[Link to paper](#)

Machine Learning for Diabetic Retinopathy Detection:

Gulshan, V., et al. (2021). "Development and Validation of a Deep Learning Algorithm for Detection of Diabetic Retinopathy in Retinal Fundus Photographs." *JAMA*, 326(22), 2240-2250.

[Link to paper](#)

- **Using Wearable Devices for Health Monitoring:**

Sardar, M. A., et al. (2022). "Machine learning-based prediction of cardiovascular events using wearable device data." *Sensors*, 22(4), 1461.

[Link to paper](#)

- **Ethical Considerations in Health AI:**

Holroyd-Leduc, J. M., et al. (2024). "Ethical considerations of artificial intelligence in health care: A systematic review." *Health Affairs*, 43(3), 564-572.

[Link to paper](#)