

Ideation Phase

Date	28 September 2023
Team id	proj-212176-Team-2
Project Name	AI based Diabetes Prediction System
Maximum mark	

Abstract:

This phase shows the problem definition and design thinking of Diabetes prediction system using AI and ML. This model accurately predict the likelihood of an individual developing diabetes based on their medical history and lifestyle factors. By analysing a range of variables such as blood sugar level, BMI, age and family history our AI system will provide early detection and personalised risk assessment. This predictive tool has the potential to assist healthcare professionals in identifying high risk individual and implementing preventive measures to reduce the burden of diabetes.

Problem definition

1.Developing an AI model to predict the likelihood of an individual developing diabetes based on their medical history and lifestyle factor.

2.Creating an AI system that can accurately classify patients as diabetic or non-diabetic using their blood sugar level, BMI and other relevant health indicators.

3.Designing an AI-powered tool that can provide early detection of diabetes by analysing patterns in a person's glucose levels over time.

4. Building an AI model that can predict the risk of diabetes complications such as kidney disease or retinopathy, based on a patient's medical records and lifestyle data.

5. Developing an AI system that can provide personalized recommendations for managing and preventing diabetes based on an individual's specific risk factors and health goals.

Problem Statements:

Early Detection of Diabetes Risk	Problem statement develop an AI based predictive model to identify individual at an early stage of diabetes risk, allowing for timely intervention and prevention strategies.
Personalized Diabetes Risk Assessment	Create an AI algorithm that provides personalized diabetes risk assessments by considering a patients.
Real time glucose Level prediction	Build an algorithm that predicts real-time glucose levels
Integrating wearable data	Integrate data from wearable devices such as continuous glucose monitors to enhance diabetes risk prediction and management.
Reducing false positives	Develop AI algorithms that minimize false positive predictions of diabetes risk, are directed towards those who truly need them.
Ethical use of patient data	Address ethical concerns and ensure the responsible use of patient data in AI-based diabetes prediction, respecting privacy and confidentiality.

Design thinking

Empathy :

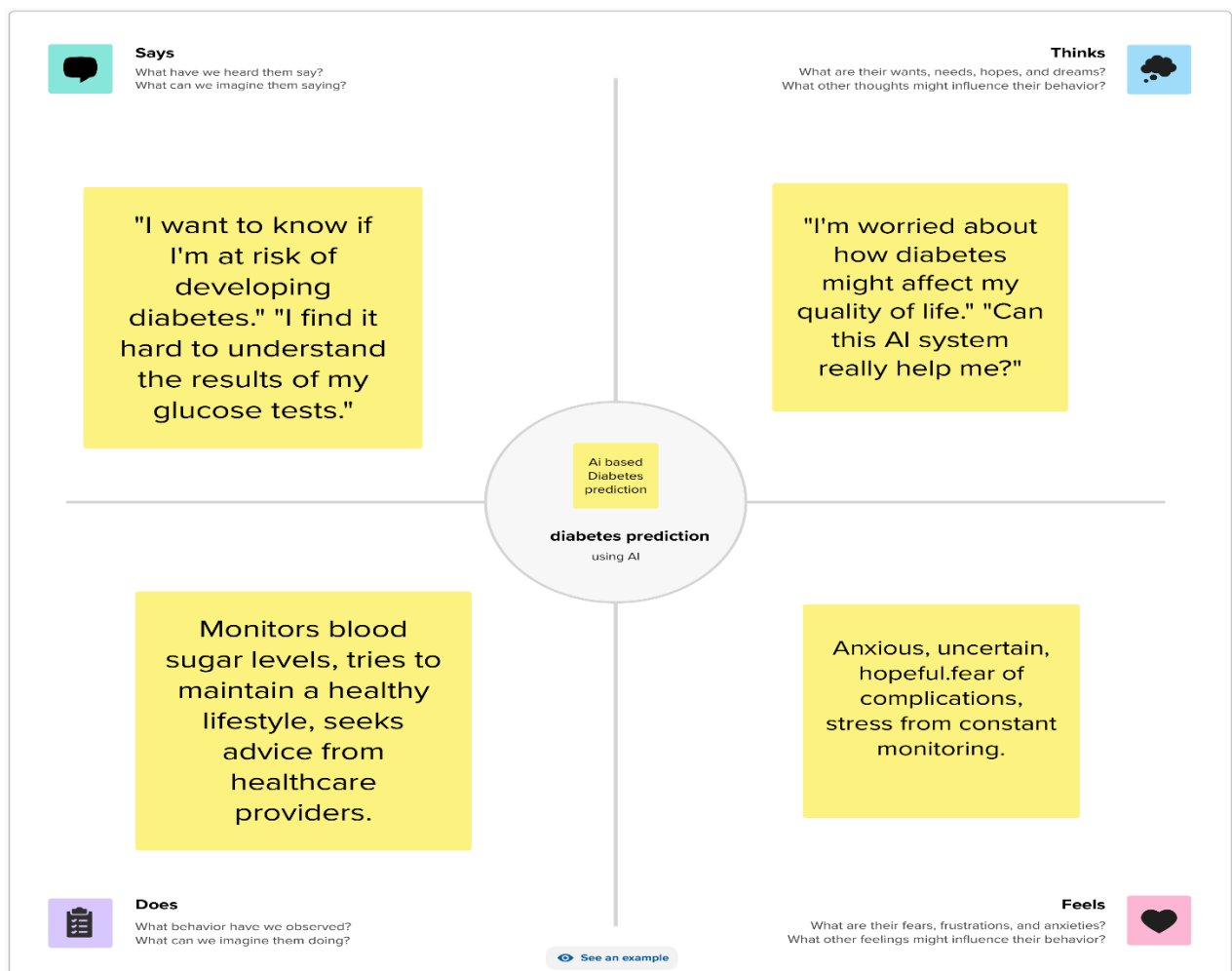
Diabetes Patients: Those who have been diagnosed with diabetes or are at risk of developing it.

Healthcare Providers: Doctors, nurses, dietitians, and other professionals involved in diabetes care.

Caregivers: Family members or friends who support diabetes patient.

Regulators: Those responsible for ensuring that the AI system complies with healthcare regulations.

Researchers: Individuals or teams conducting research on diabetes prediction and management.




Brainstorm:

Brainstorming is a creative process that can help generate innovative ideas and solutions for AI-based diabetes prediction. When brainstorming for this context, it's important to involve a diverse group of experts, including data scientists, healthcare professionals, and domain specialists. Here are some brainstorming ideas to get you started


Brainstorm


6 people - 3 ideas - 5 minutes
will give you 108 ideas built
on each other


Created by  AppHaus

PURPOSE
With the 6-3-5 method, you can easily create a lot of ideas and encourage participants to build ideas off of each other.

SETUP

**PEOPLE**
3 - 6

**TIME**
1 HOUR

**EXPERIENCE**
INTERMEDIATE


STEPS

- Start brainstorming (30 min)
- Cluster and vote (30 min)


TIPS FOR MODERATION
If you have to cut time, give three minutes instead of five minutes in the first round of brainstorming. Make sure to have enough time to read the existing ideas.

PREREQUISITES
Problem statement:
Point of view
Problem statement:
How might we...

RECOMMENDED FOR
Design phase



RESOURCES



AI based Diabetes prediction

1. Start brainstorming (30 min)

Feature Engineering

Feature Engineering:

- Brainstorm a comprehensive list of features that could be relevant for diabetes prediction. Consider not only medical data but also lifestyle, genetic, and environmental factors.

Data source

Data Sources:

- Explore potential data sources beyond traditional electronic health records, such as wearable devices, mobile apps, and patient-reported data.

Real-time Monitoring

Real-time Monitoring:

- Brainstorm ways to incorporate real time monitoring of glucose levels, physical activity, and dietary habits into the prediction model.

personalization

Personalization:

- Discuss how to tailor predictions and recommendations to individual patients, considering their unique profiles and needs.

Explained AI

Explainable AI:

- Explore methods to make the AI predictions more transparent and understandable to both healthcare providers and patients.

Early Intervention

Early Intervention:

- Brainstorm strategies for early intervention, such as alert systems that notify healthcare providers when a patient's risk of diabetes increases significantly.

Behavioral Insights

Behavioral Insights:

- Consider how AI can provide insights into patient behaviors and help motivate healthier choices.

Integration with EHRs

Integration with Electronic Health Records (EHRs):

- Discuss how to seamlessly integrate AI predictions into existing EHR systems used by healthcare providers.

Patient Engagement

Patient Engagement:

- Brainstorm ways to engage and educate patients about their diabetes risk and the importance of preventive measures.

Telehealth Integration

Telehealth Integration:

- Explore the integration of AI predictions with telehealth platforms to enable remote monitoring and consultation.

Bias Mitigation

Bias Mitigation:

- Discuss strategies for identifying and mitigating bias in AI algorithms to ensure fairness and accuracy across diverse patient populations.

Regulatory Compliance

Regulatory Compliance:

- Brainstorm how to ensure that the AI-based prediction system complies with healthcare regulations and data privacy laws.

Idea prioritization:

Prioritizing ideas for diabetes prediction is essential to focus your resources and efforts on the most impactful and feasible projects.

Define Criteria for Prioritization:

Clearly outline the criteria and factors that you will use to evaluate and prioritize ideas. These criteria can include impact, feasibility, alignment with goals, and resource availability.

Evaluate Impact:

Assess the potential impact of each idea on diabetes prediction and patient outcomes. Consider factors like the number of people it could benefit and the magnitude of improvement.

Risks and Challenges:

Assess potential risks, challenges, and obstacles associated with each idea. Prioritize ideas that have manageable risks or a clear plan to address challenges.

