Cloud-driven Health Care Optimization

Leveraging AWS Ecosystem Tools For Real-Time Heartbeat Monitoring And Prediction

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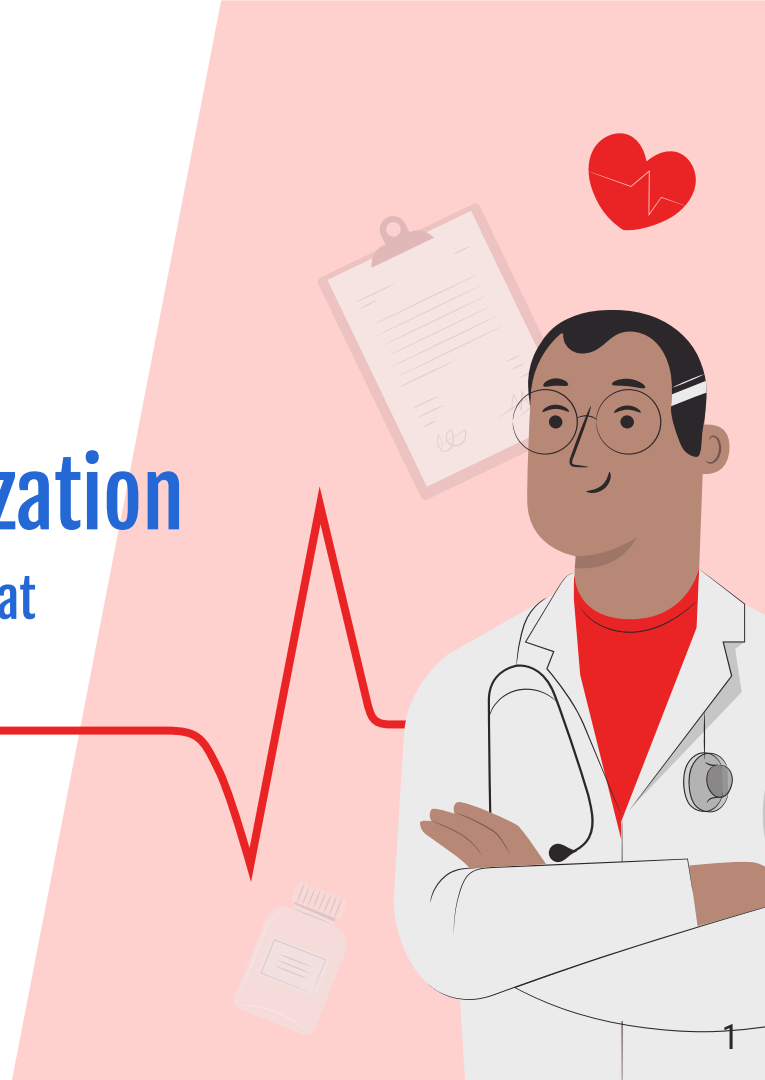


Agenda

1. Business Diagnosis
2. Architecture Building
3. Dataset Description
4. Future Prospect

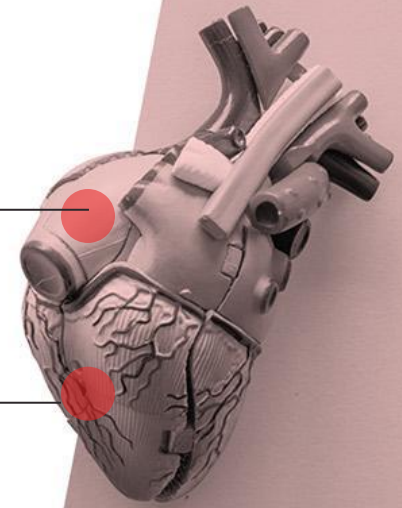
1

Business Diagnosis

Business Diagnosis

Situation:

Healthcare industry faces challenges in fully utilizing the vast daily data due to usability issues. Real-time data utilization for health monitoring is underexplored.

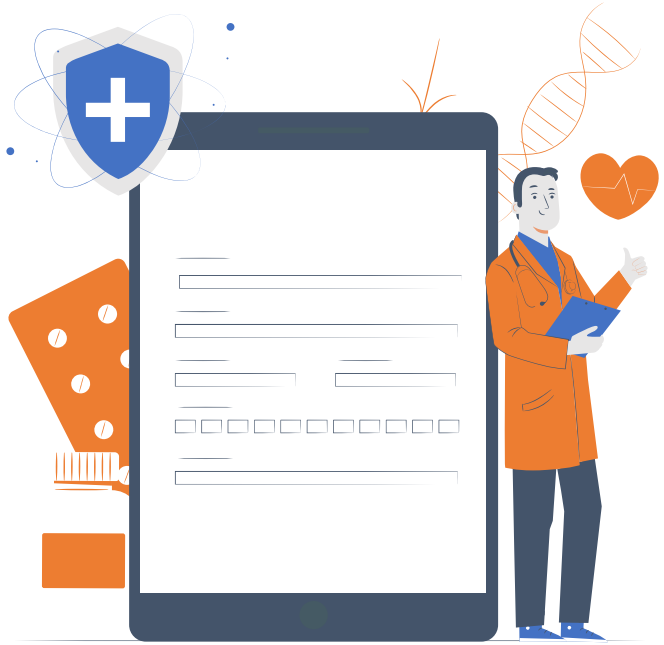


Key Question :

Lack of an efficient real-time heart rate analysis system for early health issue detection.

How can we help

Using a system integrating machine learning and stream processing for accurate predictions and timely alerts.



AWS KINESIS + AWS LAMDA + AWS SAGEMAKER

- Scalability
- Reliability
- Early intervention

2 Architecture Building

Data tools and services

Kinesis Streams

Serve as streaming data source for real-time heart rate data.

Lambda

Act as event-driven processors for heart rate data.

Sagemaker

Responsible for machine learning, offering predictive analytics.

Pipeline

Data

Kinesis Streams:
handling large-scale real-time streaming data

AWS CloudWatch:
real-time dashboard to monitor detection and response

Lambda Function:
triggered by new records arriving in Kinesis Stream, then invokes the deployed SageMaker model

AWS SageMaker:
deployed as an endpoint, allowing it to make real-time predictions on incoming data from a streaming source.

3

Dataset Description

non-ectopic

Dataset Description

Arrhythmia Dataset

Samples: 109446

Columns: 188

Categories: 5

Frequency: 125 Hz

Classes: ['N', 'S', 'V', 'F', 'Q']

Features:

Multiple different heartbeats signals collected by the instrument

Outcome Classes:

Normal: N (non-ectopic),

Abnormal: S, V, F, Q (related to different kinds of heartbeats problems)

Demo

4

Future Prospect

Next Step

AWS Quicksight

Integrate prediction results with additional data to create a more comprehensive monitoring dashboard using AWS Quicksight

AWS CloudWatch Alert

Establish an alert to promptly report any abnormalities in heart rate.

More Use Cases

Other Healthcare utilization

- Different kind of diseases

Anomaly detection

- Fraud detection
- Monitoring production line

OUR TEAM

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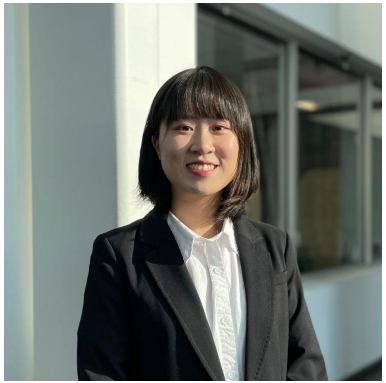

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