BUILDING A HOME HEALTH MONITORING SYSTEM BASED ON MACHINE LEARNING AND BLOCKCHAIN TECHNOLOGIES

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What ?

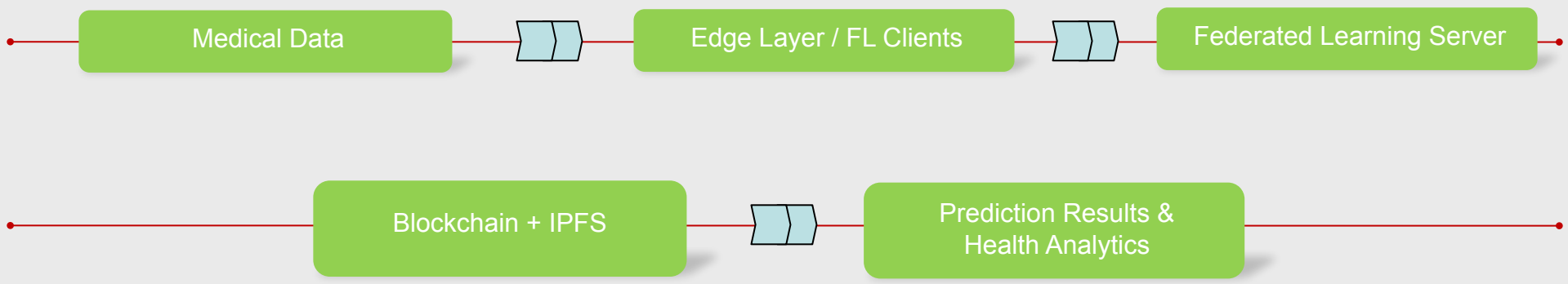
We propose a home health monitoring system that integrates Federated Learning, Deep Learning, and Blockchain to support remote healthcare monitoring and disease prediction.

- Train models on distributed medical data without sharing raw data
- Provide applications for doctors and patients

Why ?

- Growing demand for **remote healthcare** and early disease detection
- Centralized data collection raises **privacy and security concerns**
- Need for trust, transparency, and data integrity in healthcare systems
- Medical data is distributed across hospitals and devices
- Our system addresses these challenges using Federated Learning + Blockchain

Overview



Description

1. Federated Learning

- Local model training at medical institutions
- Only **model weights** are shared
- Improves privacy and scalability

2. Deep learning models

- NN: Diabetes prediction from medical data
- CNN: Pneumonia detection from chest X-ray images

3. Blockchain & IPFS

- Blockchain ensures data integrity and transparency
- IPFS enables distributed and scalable data storage

INPUT - OUTPUT

Input
- Medical records
- Sensor data
- Chest X-ray images

Output
- Diabetes prediction results
- Pneumonia prediction results
- Health data analysis for decision support

EXPECTED RESULTS

- Accurate prediction of diabetes and pneumonia
- Privacy-preserving model training using FL
- Secure and transparent data management via Blockchain
- User-friendly application for remote health monitoring

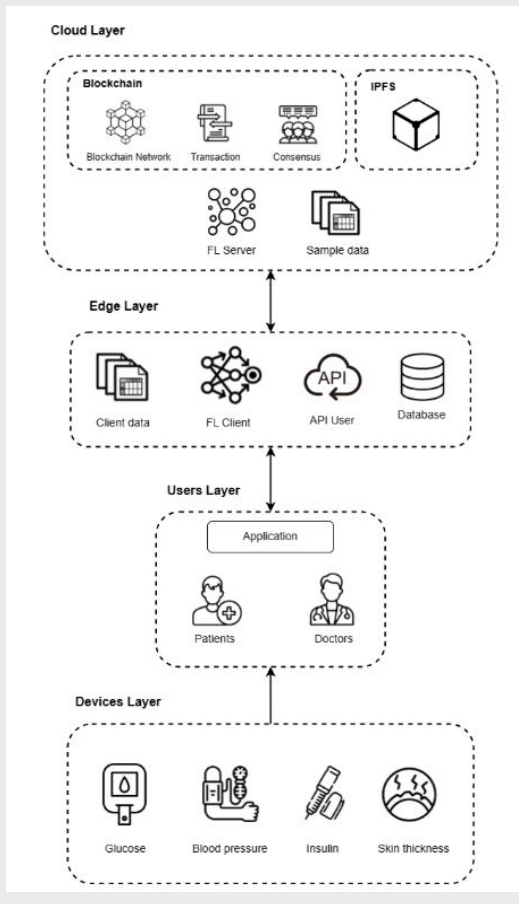


Figure 1. Overview system

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