I.Introduction

I.I overview

This project is a health monitoring system that can detect the health level of the user. It can help individuals be more aware of their medical situation and may detect some symptoms early on.

I.II. purpose

This project aims to build a mobile app which will visualize the health parameters and show the user's health level according to the predicted output.

II .Literature Survey

II.I. existing problem

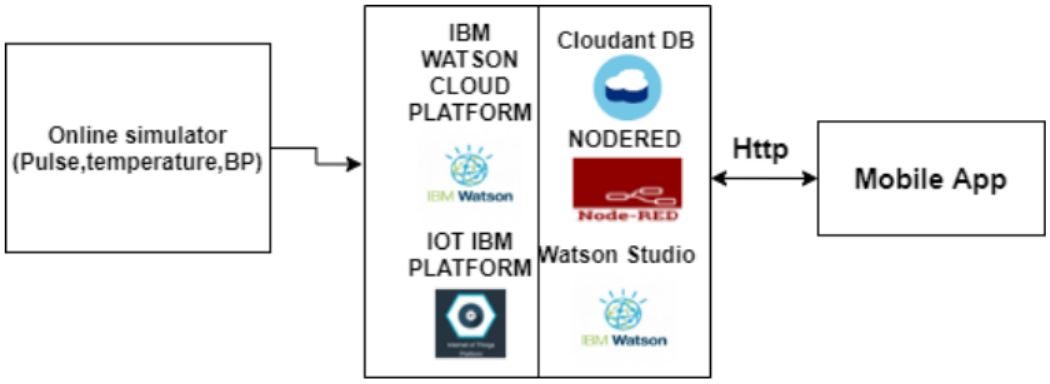
The detection of early diseases can play a vital role in people's lives and may save them. This Health monitoring system can reduce medical costs for the user and help them identify hidden diseases if they have any. It is quick and easy to use.

II.II Proposed solution

The IoT device will sense the temperature, pulse and BP values of the person and upload it to IBM IoT platform. In the cloud the data will be sent to a Machine learning algorithm (using AutoAI) to predict his health status and alerting the persons if their health condition is abnormal.
Then a dashboard which will visualize the health parameters.

III. Theoretical analysis

III.I. Block Diagram



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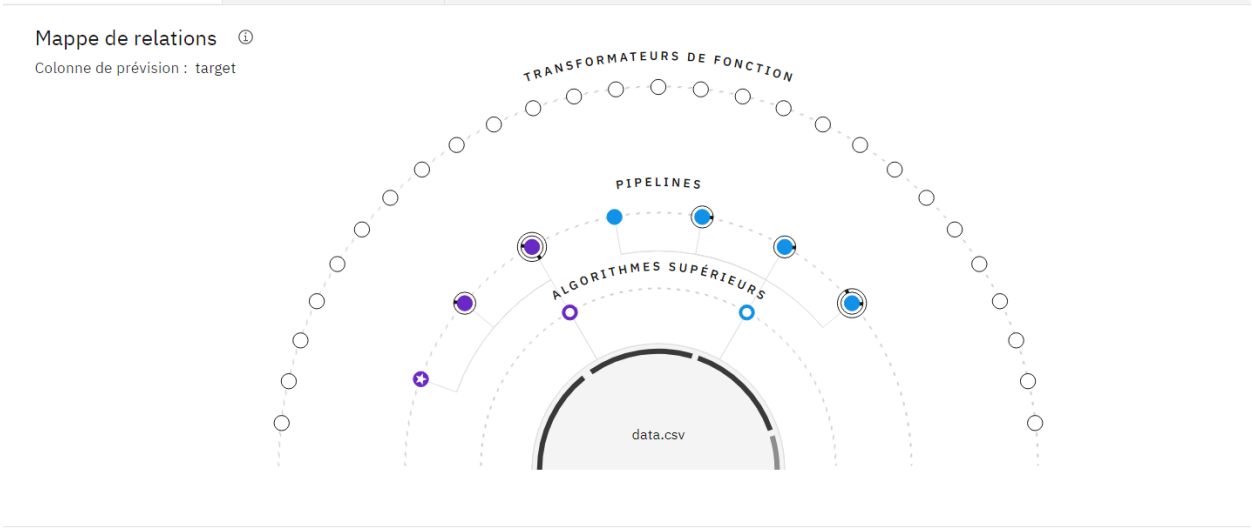
III.II. Hardware/Software Designing :

1. **IBM Cloud:** A set of cloud computing services for business offered by the information technology company IBM. It combines platform as a service (PaaS) with infrastructure as a service (IaaS).
2. **IBM Watson Studio:** IBM's software platform for data science. The platform consists of a workspace that includes multiple collaboration and open-source tools for use in data science.
3. **Watson Iot Platform** : A fully managed, cloud-hosted service with capabilities for device registration, connectivity, control, rapid visualization and data storage
4. **IBM Watson Machine Learning:** A service that enables you to create, train, and deploy self-learning models using an automated, collaborative workflow.
5. **Node-RED:** A flow-based development tool for visual programming developed originally by IBM for wiring together hardware devices, APIs and online services as part of the Internet of Things.

IV. Experimental investigation

IV.I. Experimental study

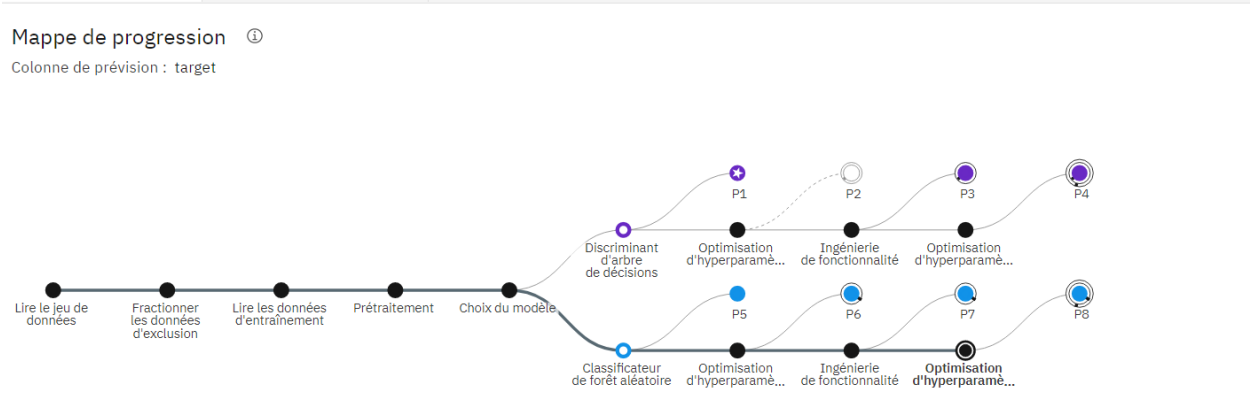


ID de terminal	Statut	Type de terminal	ID de classe	Date de l'ajout	Description de l'emplacement	Ajouté par
12345	Déconnecté	project	Terminal	17 févr. 2021 11:06		neila.damak@gmail.com

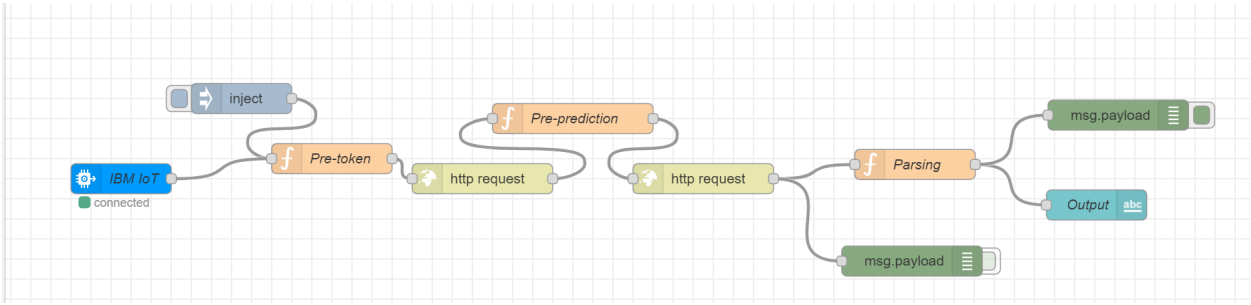
Identité | Informations sur le terminal | Evénements récents | Etat | Journaux

ID de terminal	12345
Type de terminal	project
Date de l'ajout	17 févr. 2021 11:06
Ajouté par	neila.damak@gmail.com
Statut de connexion	**Déconnecté** Dernière connexion : 4 mars 2021 12:55 Adresse du client : 196.203.181.122 SecureToken Durée : 14 minutes Données transférées : 54.6 KB

IV.II. Pipeline comparison

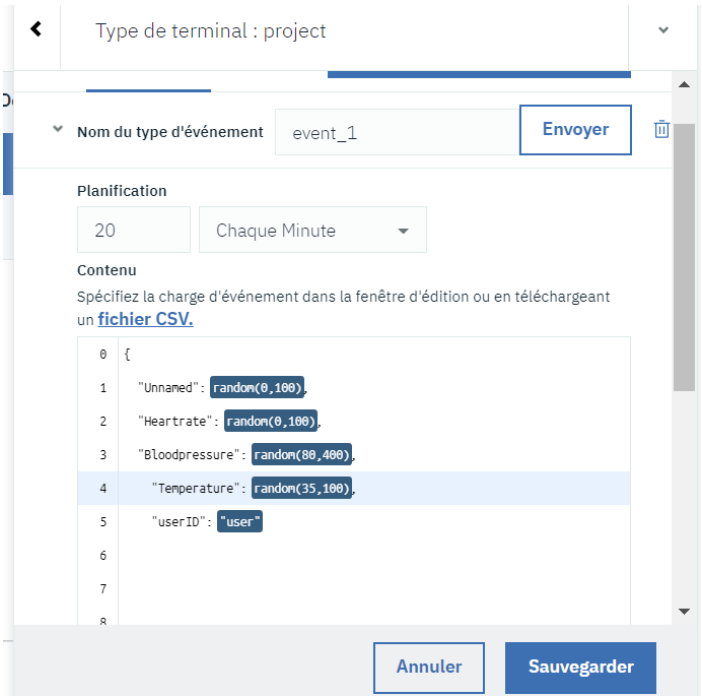


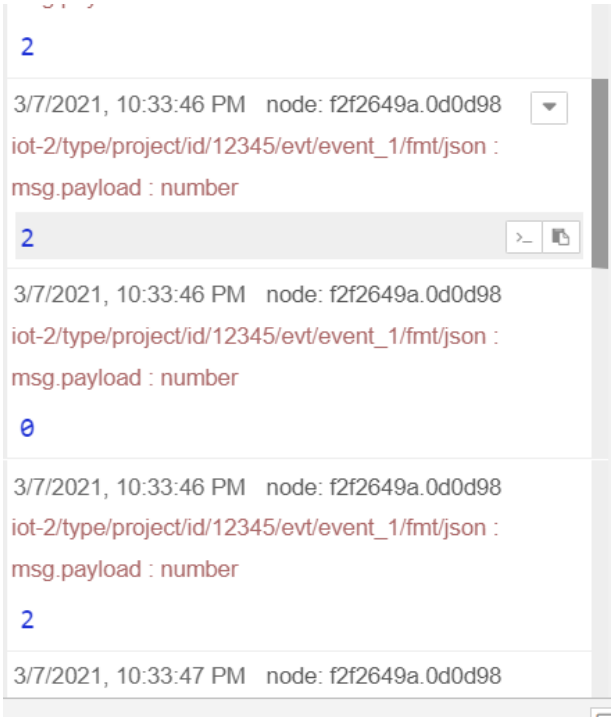
V.Flowchart



VI.Results

A simulation was made on IBM Watson IoT Platform. There were 5 generated values (Unnamed, Heartrate, Bloodpressure, Temperature and userID)
there are 20 values generated every minute. We can see in the ouput on Node Red the predictions (2 & 0 in this example)





VII. Advantages and disadvantages

VII.I. Advantages

1. Quick detection
2. Fast ML model
3. Easy implementation

VII.II. Disadvantages

1. Not a precise model due to limited features
2. IoT simulator is different from a real IoT device

VIII. Applications

This solution is adaptable to the field of healthcare and can be used by anyone (App store/Google Play)

IX . Conclusion

This project is a solution to predicting the health level of a user by using IBM Watson Machine Learning Service, IBM Watson IoT Platform and Node-RED.

X . Future scope

Machine learning techniques can be a revolutionary solution to detecting anomalies and diseases in the human body.

It's a tool to anticipate an alarming health situation and can be applied to many different diseases. It is also crucial for health problems which can only be detected through precise measurements of the bloodpressure, heartrate,..etc and could not be seen directly.

Source code

https://drive.google.com/drive/folders/1xX0lSsT6OD-VUKsQ_2yhNcrCdX1ffU-2?usp

=sharing