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IoT Hackathon Proposal - Ana Marín

Cardiovascular disease Prediction App

Background:

Cardiovascular diseases (CVDs) are the leading cause of death globally, taking an estimated 17.9 million lives each year.

- WOS https://www.who.int/health-topics/cardiovascular-diseases#tab=tab_1
- AHA https://www.ahajournals.org/doi/10.1161/CIR.0000000000000950#

Dataset:

https://www.kaggle.com/sulianova/cardiovascular-disease-dataset

11 features + class / 70.000 instances

3 types of input features:

- Objective: factual information
- Examination: results of medical examination
- Subjective: information given by the patient

Allows supervised learning. Classification into presence or absence of cardiovascular disease

Idea:

Use this dataset to build a prediction algorithm for high risk / low risk of having CVD

Build a telemedicine app:

- The app can be used by patients to enter their data and obtain a risk classification
- If the risk is classified as high -> they can contact their doctor directly
- Build 2 models: one with no labs and another one with labs
- Lab results automatically added by the lab to the patient profile

- Recommendations tab (e.g. advice to quit smoking, low cholesterol/glucose diet if the levels are high…)
- Analytics tab for doctors -> find important visualizations and present them to the doctor, or allow them to choose the variables to project, locate the patient X in the general statistics…

Work in teams

- 1 person works on the background / introduction part: why or idea is good, why these variables, where the app would be important (e.g. rural areas in which hospitals and doctors are far away), how IoT is used…
- 3 people work on the AI part (preprocessing, model selection, evaluation…)
- 3 people work on the "app" (tabs, data visualisation, data input…)

Examples:

https://downloads.hindawi.com/journals/misy/2017/9369532.pdf

https://devpost.com/software/heart-disease-prediction-app

https://medium.com/analytics-vidhya/heart-disease-predictor-an-machine-learning-application-965974b50407

https://ieeexplore.ieee.org/abstract/document/8740989