SIEMENS Healthineers

This document contains three separate problem statements provided by Siemens Healthineers, with each statement carrying a cash prize of its own, to be awarded by Hack Off v3.0. All teams submitting solutions to any of these three statements must hereby agree to follow the Terms and Conditions as mentioned below:

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COMBINE REVIEW TAGS BASED ON MEANING

Background:

Customers write product reviews on ecommerce websites like Amazon. Amazon processes the reviews to generate commonly occurring tags. But, there exist multiple tags referring to the same thing.

Example

Read reviews that mention

battery life | **fingerprint** | fingerprint reader | value for money

camera quality | face recognition | price range | battery backup

fingerprint sensor | super amoled | knox security | fingerprint scanner

Top reviews ⌄

Top reviews from India

Showing 1-8 of 9 reviews with "fingerprint"   Clear filter

★★★★★ **Definitely a class "A" phone!**
Reviewed in India on 1 March 20
Verified Purchase
...android implementation out there (if not the best). Cons: 1. The on-screen fingerprint reader takes getting used to. It is not as fast as a non on-screen one and sometimes fails to recognise. Overall, it is good, just requires getting used to. Read more ›

Tag	# Reviews
Fingerprint	119
Fingerprint reader	52
Fingerprint sensor	24
Fingerprint scanner	18

These 4 tags refer to the same thing.

Ideally there should be only one tag - **fingerprint reader** that combines all other fingerprint related tags and maps to the corresponding reviews.

Problem Statement:
Create algorithm to combine review tags based on meaning.

Data :
Customer reviews from e-commerce sites (Dataset link will be provided)

Assistive Technology: Heartbeat classification for Wearables

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Healthineers

Challenge

To propose and implement an intelligent real time heartbeat classification algorithm and supplement results with Explainable AI

Description

Cardio Vascular Diseases happens to be the major contributor of death rate. Heartbeat is a basic physiological function of the human body and it indicates and helps a lot in investigation of heart function. One non-invasive method of assessing heart function is using an ECG. The dataset provided for this challenge has 17 classes of ECGs. There are attempts made classifying this data using different approaches, please refer online for sources. There is one article which is provided in the references section for you to understand the problem better

Expectation

You are expected to come out with an approach to solve the classification problem as a real-time solution (so it could be fabricated into wearables) and embed 'Explainable AI' to substantiate your classification semantically
Note: Explainable AI can be offline solution

Dataset

https://data.mendeley.com/datasets/7dybx7wyfn/3

Reference

https://www.frontiersin.org/articles/10.3389/fphys.2020.569050/full

Problem Statement for a chatbot for General Health Query

Problem statement:

Build a AI driven chatbot for general health related query(a first level screening):

Example :

        Question: What is the side effect of Paracetamol ?

                Bot answer : nausea, vomiting, constipation

        Question: what are symptoms of cancer ?

                Bot answer:..........

Methodology :

1) Build a corpus of data

        a) from publicly available dataset

        b) do web scrapping of medical sites like webmd.com etc..

2) Use deep learning techniques like , rnn , tranformer to understand the context

3) use 'Stanford SQuAD' like libraries for question /answer understanding

4) NLU and bot system like RASA for protype

5) Invent to derive new methodology