Problem-Solution Fit canvas

Purpose / Vision:
Classification of Arrhythmia By Using Deep Learning With 2-D ECG Spectral Image Representation

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Define CS, fit into CL

1. CUSTOMER SEGMENT(S) — CS

- Patients looking forward to know about their class of arrhythmia.
- For users who want to be self-reliant without any medical equipment.
- Also Doctors / clinical experts who want automated methods to improve the clinical diagnosis and treatment of some of the major CVDs.

6. CUSTOMER LIMITATIONS — CL

EG. BUDGET, DEVICES

- have to know basic image uploading skills.
- have a cell phone / laptop.
- have a Gmail / Google Account.
- have proper images and medical records.

5. AVAILABLE SOLUTIONS — AS

PLUSES & MINUSES

- wearing a small portable ECG recording device for 24 hours or longer is usual of detection which is considered to be time consuming by users.
- Timely treatment is not possible with using only ECG.
- Traditional Clinical lab testing but does not use any automated systems related to CVDs.

Explore AS, differentiate

Focus on PR, tap into BE, understand RC

2. PROBLEMS / PAINS + ITS FREQUENCY — PR

- People want to know about their results of classification even though they don't have any knowledge for taking timely treatments as quick as possible.
- People / users / patients want to share their reports with clinical experts and their prescribed doctors for further course of action that is need to be taken.
- People are also afraid that if their results are accurate and how proper classification is being done with automated systems being used and also privacy of personal reports being shared through websites.
- People want do quick conformation anywhere anytime with just having only the images they have from tests.

9. PROBLEM ROOT / CAUSE — RC

- They need use multiple ECG tests which could not be even accurate under traditional methods.
- Have to wait for long hours for the test results done in Clinical labs by experts were there are proven to be human errors in classification.
- No proper maintenance of patient records in hospitals and labs and leading to privacy issues of patient documents being made publically available under health organizations.
- Clinical experts might need to look at ECG recordings over a longer period of time for detecting cardiac arrhythmia.

7. BEHAVIOR + ITS INTENSITY — BE

- People use different methods of classification techniques under the guidance of doctors and clinical experts for arrhythmia but there no automated systems being used mostly in daily life.
- Some even stop taking tests as they cost high and also takes lots of time under experimentation leading to poor test results making early treatment not possible in some cases.

Focus on PR, tap into BE, understand RC

Identify strong TR & EM

3. TRIGGERS TO ACT — TR

- People want to make their life easier, feel safe and connected anytime, anywhere.
- Have a proper web application to make things automated and easy to detect their health with accuracy.

4. EMOTIONS — EM

BEFORE / AFTER

- People / patients / users did feel reliable and efficient with traditional ECG methods so automated systems and the web application goal is to change it!
- People with be having result classified quickly with more accuracy without taking longer periods of time waiting for treatments.

10. YOUR SOLUTION — SL

- to propose a 2-D CNN-based classification model for automatic classification of cardiac arrhythmias using ECG signals.
- to make a web application as reliable as possible for the user/patient to fed his image into the model that is trained and the cited class is displayed on the webpage.
- to help experts diagnose CVDs by referring to the automated classification of ECG signals.
- to further improve experimental cases.
- enhancing the accuracy of diagnosis algorithms in the fusion of medicine and modern machine. learning technologies.

8. CHANNELS of BEHAVIOR — CH

ONLINE

- Social media results regarding automated web application create awareness for other users on the efficiency and reliability about the automated classification of cardiac arrhythmias and also Expert advertise online test proofs.

OFFLINE

- Word of mouth among users, clinical experts, patients and people in the society.

Extract online & offline CH of BE

proposed a 2-D CNN-based classification model for automatic classification

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