Define CS, fit into CC

Focus on J&P, tap into BE, understand RC

Explore AS, differentiate

Focus on J&P, tap into BE, understand RC

1. CUSTOMER SEGMENT(S) `CS`

Who is your customer?
i.e. working parents of 0-5 y.o. kids

Our main target customers are heart specialists(cardiologist)., medical labs.

6. CUSTOMER CONSTRAINTS `CC`

What constraints prevent your customers from taking action or limit their choices
of solutions? i.e. spending power, budget, no cash, network connection, available devices.

Many cardiologist require vast experience to analyze the ECG reports and to identify the abnormal heartbeat.

5. AVAILABLE SOLUTIONS `AS`

Which solutions are available to the customers when they face the problem

or need to get the job done? What have they tried in the past? What pros & cons do these solutions have? i.e. pen and paper is an alternative to digital notetaking

Usually experienced cardiologists look into the ECG scan pattern and identify the problem. Recently computer aided diagnostics has unraveled a new arena of opportunities. Different methods to classify types of arrhythmia using machine learning and deep learning exists. The problem is that these architectures are too deep and they take quite some to train and take up some space as well.

2. JOBS-TO-BE-DONE / PROBLEMS `J&P`

Which jobs-to-be-done (or problems) do you address for your customers? There could be more than one; explore different sides.

- Classify different types of arrhythmia for diagnosis and treatment
- Try to gain insights from the available ECG data about certain specific characteristics related to the disease and its treatment

9. PROBLEM ROOT CAUSE `RC`

What is the real reason that this problem exists? What is the back story behind the need to do this job? i.e. customers have to do it because of the change in regulations.

The reports when analysed manually consumes more time. Sometimes even false negative outcome is produced. So this may not be helpful for the patient.

7. BEHAVIOUR `BE`

What does your customer do to address the problem and get the job done?
i.e. directly related: find the right solar panel installer, calculate usage and benefits; indirectly associated: customers spend free time on volunteering work (i.e. Greenpeace)

- To refer to experts in their field.
- research To learn and more about different types of arrhythmia.

3. TRIGGERS   `TR`

Increasing mortality rates due to untreated arrhythmia

4. EMOTIONS: BEFORE / AFTER   `EM`

- Apprehensive / Much more confident
- Confused/Clarified

10. YOUR SOLUTION   `SL`

To address the problem of misclassification, we intend to use artificial intelligence to assist different laboratories and doctors with the classification of different major types of arrhythmia. Our solution involves the use of deep learning and feature selection methods that help improve the current classification accuracy obtained by CNNs, and reduce the workload of doctors in diagnosis.

The proposed solution involves extracting temporal and spectral features from the ECG recording using a CNN. These extracted features are then passed to a feature selection algorithm that reduces the dimensionality of these features. After this, a machine learning model is used to then classify these features into the 5 major types of arrhythmia, and a class which says the arrhythmia does not belong to these 5 types.

8. CHANNELS of BEHAVIOR   `CH`

8.1 ONLINE

- To go online and research more about different types of arrhythmia.

8.2 OFFLINE

- Refer experts in their field and goes through books and papers to know about different types of Arrhythmia patients.