



Project Design Phase-I - Solution Fit

Project Title: Classification of Arrhythmia by Using Deep Learning with 2-D ECG Spectral Image Representation.

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Problem-Solution fit canvas 2.0			Purpose / Vision		
Define CS, fit into CC	1. CUSTOMER SEGMENT(S) <small>Who is your customer? I.e. working parents of 0-5 y.o. kids</small> CS our main target customers are heart specialists(cardiologist),medical labs	6. CUSTOMER CONSTRAINTS <small>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.</small> CC many cardiologist require vast experience to analyze the ECG reports and to identify the abnormal heartbeat.	5. AVAILABLE SOLUTIONS <small>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</small> AS usually experienced cardiologist 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.	Explore AS, differentiate	
	2. JOBS-TO-BE-DONE / PROBLEMS <small>Which jobs-to-be-done (or problems) do you address for your customers? There could be more than one; explore different sides.</small> J&P * classify different types of arrhythmia for diagnosis and treatment * Try to gain insight frm the available ECG data about certain specific characteristics related to the disease and its treatment.	9. PROBLEM ROOT CAUSE <small>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.</small> RC 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 <small>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)</small> BE * To refer to experts in their fields * Research to learn and more about different types of arrhythmia		Focus on J&P, tap into BE, understand RC
3. TRIGGERS <small>What triggers customers to act? I.e. seeing their neighbour installing solar panels, reading about a more efficient solution in the news.</small> TR Increasing mortality rates due to untreated arrhythmia.	10. YOUR SOLUTION <small>If you are working on an existing business, write down your current solution first, fill in the canvas, and check how much it fits reality. If you are working on a new business proposition, then keep it blank until you fill in the canvas and come up with a solution that fits within customer limitations, solves a problem and matches customer behaviour.</small> SL To address the problem of misclassification,we intend to use ai to assist different laboratories and doctors with the classification of different major types of arrhythmia.our solution involves the uses 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.	8. CHANNELS of BEHAVIOUR 8.1 ONLINE <small>What kind of actions do customers take online? Extract online channels from #7</small> * To go online and research more about differnt types of arrhythmia. 8.2 OFFLINE <small>What kind of actions do customers take offline? Extract offline channels from #7 and use them for customer development.</small> * Refer experts in their fields and goes through books and papers to know about different types of arrhythmia patients.	Extract online & offline CH of BE		
4. EMOTIONS: BEFORE / AFTER <small>How do customers feel when they face a problem or a job and afterwards? I.e. lost, insecure > confident, in control - use it in your communication strategy & design.</small> EM * Apprehensive /much more confident * confused /clarified					


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