Healthy Living Partner Project Proposal

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Business Goals

Project Overview and Goal What is the industry problem you are trying to solve? Why use ML/AI in solving this task? Be as specific as you can when describing how ML/AI can provide value. For example, if you're labeling images, how will this help the business?	Overview and Goal Costs of healthcare are rising at a significantly high rate in the United States with no limit in sight. More troubling is the cost of diagnosing chronic illness. Healthcare providers, patients and insurance service providers face a very challenging battle. Healthcare Service Providers are exploring preventative care space to help their patient base increase physical activity and improve on healthy habits. While the overall goal is improved patient satisfaction and well being, the specific financial goal is reduced cost by emphasizing improved health prior to any adverse conditions developing. Overall, Healthcare Providers want to decrease spending on chronic diseases such as type 2 diabetes and related conditions. Healthy Living Partner is a mobile app that monitors and tracks healthy habits. Machine Learning/Artificial Intelligence is being applied as a solution in this proposal because the fundamental architecture of this HLP is data-driven and data-reliant. ML/AI can provide values in tracking, extracting and analyzing user performance data to influence decision making. The information can be used to create models for predicting and identifying potential health risks and mitigation.

	Health Problem - Diabetes is a major common disease that is financially costly to society. It causes damage to large blood vessels of the lungs, heart, brain and legs. Also, to small blood vessels causing problems in eyes, kidneys, feet and nerves. These are medically referred to as macrovascular complications of Diabetes. Healthcare Problem - Diabetes and any other chronic illness is extremely costly to diagnose. About $245B in wasteful cost in diagnosis that could be saved. Solution Focus - The idea is to prevent this disease through a life changing healthy habit by tracking and monitoring user performance data, thereby reducing healthcare costs and saving lives. Opportunity ❏ Mobile Health apps market size was valued USD 12.4 billion in 2018, projected to expand at a CAGR of 44.7% over the forecast period. ❏ Estimated cost of diagnosed diabetes in 2017 is $327 B, including $237 B in direct medical costs. https://care.diabetesjournals.org/content/early/2018/03/20/dci18-0007 ❏ About 33 percent of American adults could have diabetes by 2050. 2018 Global healthcare sector revenue was $1.853 trillion, with an increase of 4.5% ❏ Healthcare yearly expenditures, US spends $10,224 per person. ❏ Americans will spend $3.65 trillion on health, which amounts to 17.8% of the country's GDP]. https://policyadvice.net/insurance/insights/healthcare-statistics ❏ Target Audience - Adults aged 45 to 74, plus new cases within 18 to 44 ❏ Total Addressable Market(TAM) for this opportunity - About $1.4 Billion
Application of ML/AI What precise task will you use ML/AI to accomplish? What business outcome or objective	1. ML/AI will utilize data from the Healthy Living Partner to determine a user's health status and make diet and exercise activity recommendations. This will contribute to a healthy diet and exercise routine built into the app.

will you achieve?	2. ML/AI will utilize user performance data to create a model for predicting the trend and improvement of patients health condition.This will add value to monitoring and tracking health status to determine treatment 3. ML/AI will determine severity and required treatment level using classification modeling

Success Metrics

Success Metrics What business metrics will you apply to determine the success of your product? Good metrics are clearly defined and easily measurable. Specify how you will establish a baseline value to provide a point of comparison.	The initial business success metrics are defined as follows: 1. Business - Minimum Viable Product(MVP) available by the end of the first 6 months. 2. Business - 2000 Trial members and 1000 converted subscribers 3 months after launch 3. Business - User subscription and usage monitoring through account activity logs. 4. User frequency and performance data gathering and warehousing for machine learning performance tuning. 5. Quality - Efficiency/Ease of use, ratings, success stories, feedback, App Store ratings available. 6. Development - Pilot/Early release in 3 months Baseline Value for comparison We will need specific data in the following areas to establish a baseline value at acceptable level: **User subscription leve**l - Number of users paying **Conversion rate** - Number of visitors that converted **Retention rate** - Measure how long user is engaged **Bounce rate** - Measure of how quickly we lose visitors

	App Store rating - At least 4.0 out of 5.0 stars **Drop rate** - Measure of how quickly we lose users

Data

Data Acquisition Where will you source your data from? What is the cost to acquire these data? Are there any personally identifying information (PII) or data sensitivity issues you will need to overcome? Will data become available on an ongoing basis, or will you acquire a large batch of data that will need to be refreshed?	Data will be collected/gathered by the product starting from trials and early adopters, available on an ongoing basis as user subscription grows. The cost of data acquisition is free. However, storage and operational costs will apply from cloud computing services. Data collection includes personally identifying information(PII), which will be industry standard compliant. There are no known issues at this point. The Legal and Compliance team will be involved in the process doing the review, thereby mitigating the risk.
Data Source Consider the size and source of your data; what biases are built into the data and how might the data be improved?	Data Source The source of data is the user and user activities. As the user participates, data is created and generated daily across the app and warehoused in the cloud through outsourced services. Size Considering the number of users on a daily basis, the size of this dataset is expected to grow significantly, It should be classified as Large. Anticipated Bias(s) Since the application is gathering its own data on an on-going basis the type of bias is not nit known at this time. However, it is anticipated in some form as the dta grows.
Choice of Data Labels What labels did you decide to add to your data? And why did	Characteristics and Data Labels Format - Comma Separated(CSV) dataset

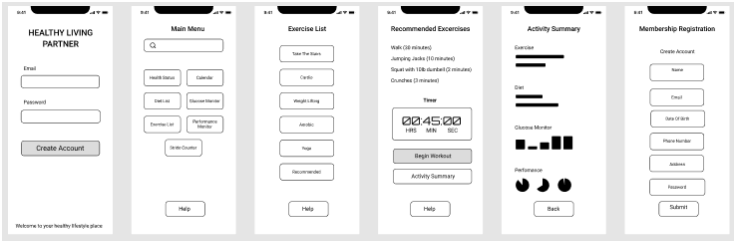
you decide on these labels versus any other option?	Features of the data required includes Name, Age, Glucose Level, Gender, Temperature, Pulse Rate, Body Cholesterol, Weight, Blood Pressure, Vital Signs, Respiration. There could be other critical ones needed later in the development. The nature and characteristics of this data set provides a clear picture of the health condition of an individual. ML/AI will learn and train on the data to determine trends and predict the likelihood of the individual developing chronic illness or improved health. As the Healthy Living Partner app collects these information, it will recommend daily diet and exercise activities. Further, it tracks the consistency and the commitment level of the user in following and adhering.

Model

Model Building How will you resource building the model that you need? Will you outsource model training and/or hosting to an external platform, or will you build the model using an in-house team, and why?	Domain knowledge is very critical in creating a robust model that best meets product requirements. The model will incorporate Regression and Classification based algorithms. Outsourcing the creation and development of a suitable Machine Learning algorithm will be outsourced, along with training and testing the model. Deployment will be done by the in-house team.
Evaluating Results Which model performance metrics are appropriate to measure the success of your model? What level of	Our evaluation will rely significantly on: Accuracy of prediction Precision F1 Score Recall All of the above will emerge from the results of

performance is required?	False Positive Rate False Negative Rate True Negative Rate False Negative Rate Accuracy level of 75% and higher is required.

Minimum Viable Product (MVP)

Design What does your minimum viable product look like? Include sketches of your product.	A mobile application that monitors, tracks and recommends healthy living habits Features: ❏ Healthy diet menu(Breakfast, Lunch, Dinner) ❏ Calendar and Time Schedule ❏ Recommends daily exercise activities ❏ Track steps and strides daily ❏ Blood sugar or Glucose level monitor ❏ Alarm Notification Diagram showing six pages from the HLP App.  This diagram and illustration was created using Figma.
Use Cases What persona are you designing for? Can you describe the major epic-level use cases	1. As a Diabetes patient, I want to have access to an app that tracks and monitors health status and lifestyle habits, including diet and exercise recommendation, so

your product addresses? How will users access this product?	that I can improve my health condition. 2. As a fitness and wellness enthusiast, I want to have access to the app Main Menu page with a list of feature options, for a healthy lifestyle so that I can choose and follow guidance to use it to improve my health condition. 3. As a Healthy Living Partner app user, I want to have access to Exercise List so I can have options, including recommended, to choose from for my daily exercise activities to incorporate a healthy habit and lifestyle. Accessing the product Healthy Living Partner is a subscription based mobile app product. A user will need to register and create an account. With username and password proper authentication, the user will gain access to the Main Page or Landing Page with options list for the features.
Roll-out How will this be adopted? What does the go-to-market plan look like?	The strategy for adoption of the Healthy Living Partner(HLP) is guided by ensuring customer awareness of the product, interest in the value it delivers, evaluation or trials and conversion or adoption. Gradual Rollout 1. Initial Trial/Freemium customers (1000 participants). The goal is to convert to subscription based at the end of 3-4 months trial period. 2. Paid Subscription customers will have to register and create an account after trial is concluded

The Go-to-market Plan

There will be a pre-launch set of activities purposely to create awareness and excitement about the product. Mostly, within and across cross-functional stakeholders.

The Product Launch Checklist:

1. Launch Date - Set a date and time and communicate to stakeholders
2. Product Positioning - Documents describing the key message for the launch as guided by the product vision
3. Pricing and Packaging - Get approval for pricing and how the product will be packaged
4. Marketing Content - Messaging for the product's website, advertising and campaign, launch email and blog posts.
5. Communications Plan - How the product will be launched within and outside the organization
6. Product Support Documentation - Create Marketing Guide, User Guide,Training Guide
7. Social Media - Prepare product launch announcement to be posted on social media channels
8. Press Release - Document describing the announcement and values of the product
9. Media Relations - Set up meeting with the media and highlight product features and capabilities
10. Analyst Briefings - Reach out and brief industry analysts about the products and its capabilities

Post-MVP-Deployment

Designing for Longevity How might you improve your product in the long-term? How might real-world data be different from the training data? How will your product learn from new data? How might you employ A/B testing to improve your product?	Post-MVP deployment, the product is planned to: ❏ Increase subscription through collaboration with Healthcare service providers through incentive programs - 1,000,000 (2 yrs) ❏ Expand product features to include API ❏ Expand interface to other reporting test devices for critical data collection and analysis ❏ Establish sales channels and incentives with health insurance providers. The training data in this application is real-data from users collected during trials and early adoption programs. The difference anticipated will be a much broader sample since the scope will be expanded beyond test and demographics. As we plan for future improvement to the product, there will be the need to test new features . A/B Test becomes an essential tool. The method will allow the deployment of a standard production version(A) and another version(B) with new features being evaluated. The product will learn from new data from an expanded demographic, as well as region. Post Launch Gather Feedback ● Conduct a Review - Gather the team to

	discuss what was learned from the product launch and how the process could be improved next time. Identify what worked well and what didn't work well • Follow up - Identify and submit bugs for engineering attention. Ensure bugs are entered into the bug management software (JIRA) with ticket/tracking numbers. Survey users for their feedback. Solicit testimonials or success stories from customers if relevant
Monitor Bias How do you plan to monitor or mitigate unwanted bias in your model?	Among others, the following steps are necessary to ensure against bias: 1. Clean Data - We have to take the necessary steps to ensure that data is clean 2. Balanced Data - A balanced training data tends to yield a balanced result or output. 3. Proper, consistent and accurate labelling of data.