Please provide a short summary of your solution, including the major functional components your solution incorporates and an explanation of how it addresses the challenge. (1000 word limit)

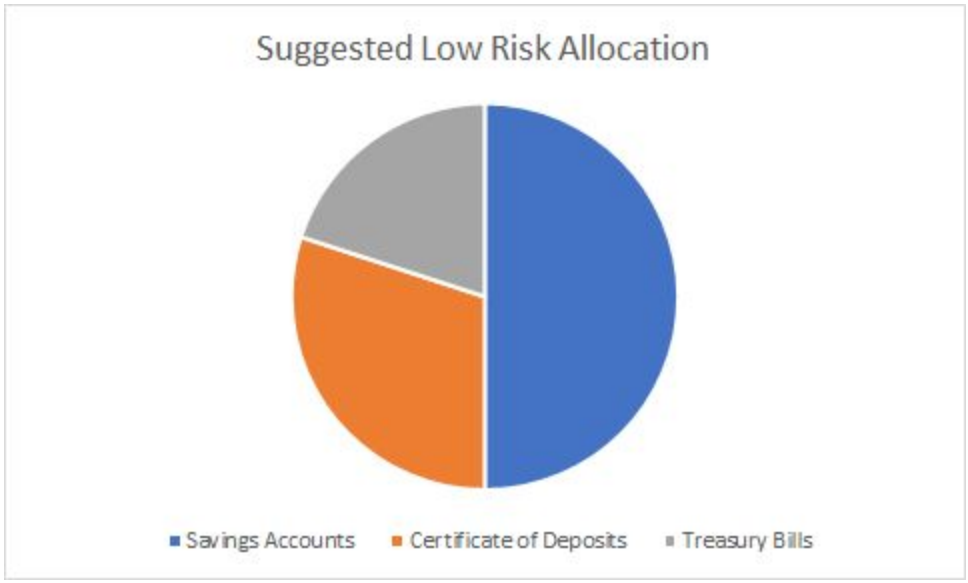
According to Forbes, millennials in general are saving for their future. However, when it comes to investing these savings, they're behind. This gap in investment is due in part to their distrust of the stock market but it is mostly a result of their financial illiteracy. A study from the National Endowment for Financial Education revealed that only 24% of millennials are financially literate.

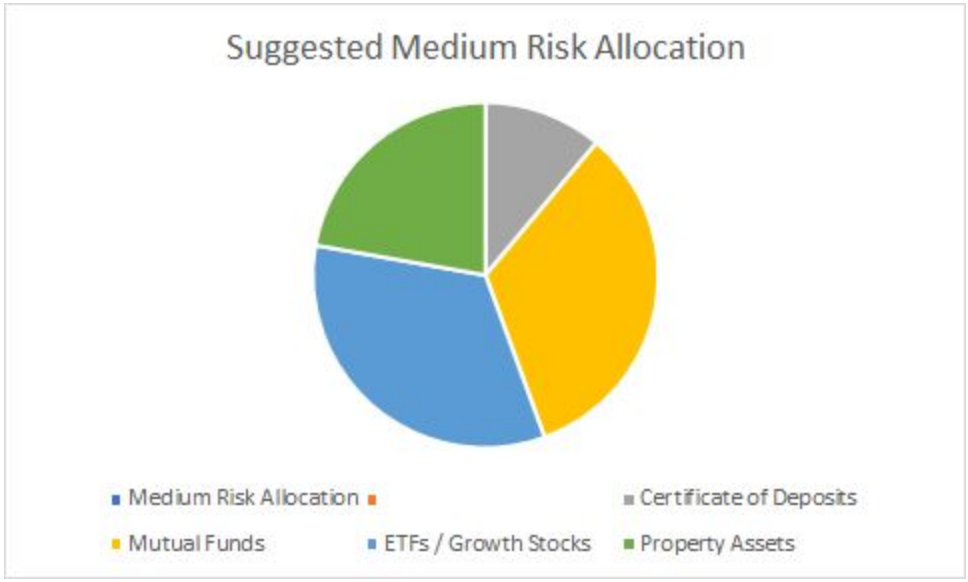
Experience is the best form of learning - as individuals start to invest, they can learn more about their own risk tolerances, their financial goals and find the best assets in which to invest to achieve these goals. However, building an understanding of personal risk profiles, financial goals and knowledge of investing are essential to making the right investment decisions.
Our platform aims to provide a framework that reflects an individual's investing potential along 3 dimensions:

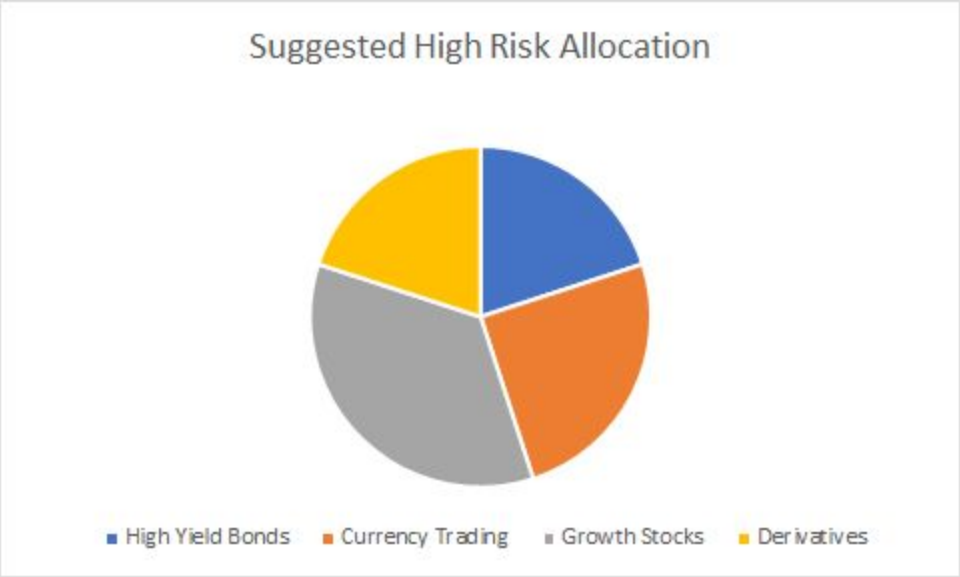
1. Financial Information - Current financial information and future financial goals
2. Individual Personality Information - Social Media Profile + personal preferences
3. Investing Knowledge - What is the current level of investing understanding

Using data from these 3 dimensions, our application maps investors into 4 categories with varying Financial Risk Tolerances (FTR) [high or low] and varying investing knowledge [high or low]. The app shares this profile information with the user as well as making recommendations on where to invest. For this reason, we have named this app WELLFIE - a Self Financial Wellness Assessment Tool (like a financial Selfie).

	Knowledge Level (Low)	Knowledge Level (High)
FTR (Low)	Low Risk Allocation	Low Risk Allocation
FTR (High)	Medium Risk Allocation	High Risk Allocation


Suggested Low Risk Allocation
Savings Accounts
Certificate of Deposits
Treasury Bills


Suggested Medium Risk Allocation
Medium Risk Allocation
Certificate of Deposits
Mutual Funds
ETFs / Growth Stocks
Property Assets



WELLFIE works in two ways. The platform can help brokerage firms collect data on and gain a better understanding of prospective or current clients. It also helps millennials (the investors) gain knowledge on various investment accounts and financial instruments. Ultimately, we want to make millennials comfortable in investing their money in a way that is most suitable for them. Not only is the platform aimed to be educational, breaking down the fundamentals of investing, but it also makes recommendations tailored to the risk profile of a client. This complies within the guidelines of Rule 2111 which states recommendations or investment strategies should derive from “reasonable diligence of the member… to ascertain the customer’s investment profile.”

Typically, diligence in a client’s investment profile is shaped by information shared by the client (i.e. quantitative information on income, age, tax status, etc.), however, this approach is limited in understanding an investor’s risk tolerance. This approach does not dive into the willingness a client has in taking risk. Our platform aims to understand the clients through a series of questionnaires and quizzes, analyzing a user with behavioral questions, as well as, gaining insight on personality through social media activity (specifically tweets). Though not complete in personifying an investor, our platform can make more accurate and tailored predictions. The output will provide the end user with a risk score, and with that risk score, provide investment recommendations.

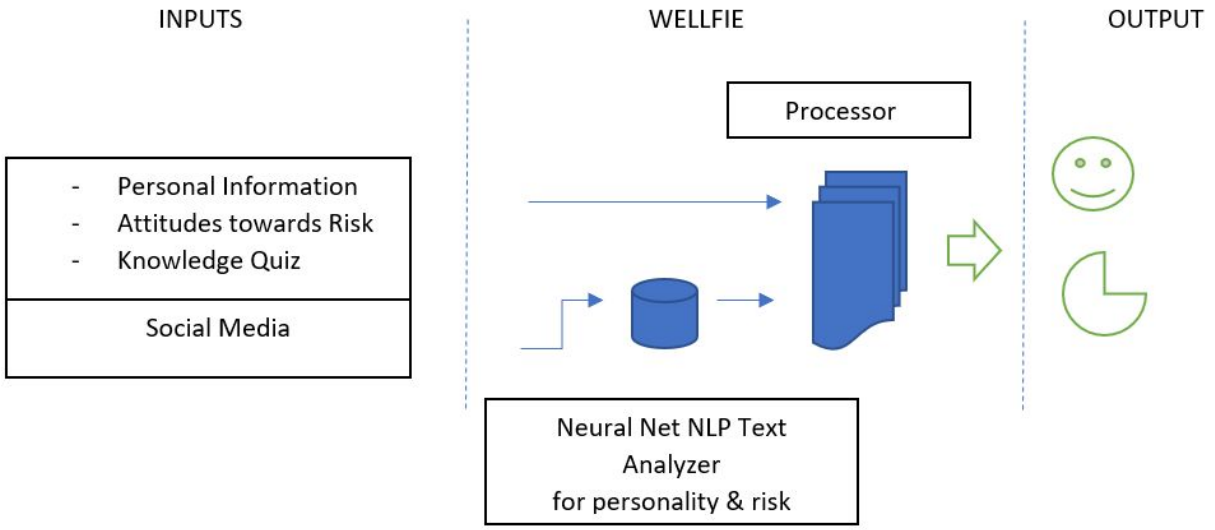
Describe the technical components that support the solution’s functionality. (1000 word limit)

The current design of WELLFIE consists of a web-based user interface, used to collect user responses to personal financial information, social media handles and quiz answers. The social

media accounts are then parsed and analyzed via an AI neural net processor, which has been trained on Kaggle data to map the user's personality to one of the 16 MBTI traits. These traits are mapped to FTR levels based on research included in the appendix to this document.

The main processing engine analyzes the responses to the user inputs to map them on 2 dimensions - FTR and Financial knowledge. The processor engine combines the social media personality trait with self-reported attitudes to life to make a single prediction of the risk level in a financial context. Performance on the quiz is taken as a proxy for financial knowledge.

Once the user is defined on these two levels, the engine then makes a prediction of the risk and investment profile and suggests possible asset allocation and investment strategies.



Note any data sets that you may have used. (1000 word limit)
We used the (MBTI) Myers-Briggs Personality Type Dataset (source: kaggle). This dataset was used as our training data - feeding in people's text samples and their MBTI personality types into a neural network model. The model is able to recognize certain words that increase the likelihood of each personality type which we used to run sentiment analysis on people's tweets via Tweepy (Twitter API). We'll use this to understand a user's personality based on their social media activity (in this case Twitter, though it can be run on Facebook and Instagram as well).

We also referenced the Morningstar Data in order to gather the risk level of securities that helps recommend what different personality profiles should invest in.

Include a link(s) to any videos you may have created. (1000 word limit)
NA

Provide any additional information that you would like to share, that makes your solution unique. (1000 word limit)

Advising systems work best when they have more information to model past, present and anticipated future behavior. This is especially true of financial investing, which is subjective, has a high degree of variability among individuals, is inherently risky, and requires education on the part of the users to make informed decisions.

Current solutions are piecemeal - they either assess the investor's current financial position and requirements, or their personality types in a non-financial context or provide education. Our solution combines these together, by explicitly incorporating an individual's personality traits to map their perceived Financial Risk Tolerance (FTR), as shown in the table below.

Our solution uses AI (a neural network) and Kaggle data-sets to create a model mapping text content to one of the 16 MBTI personality types. Basing on existing research[1][2], these traits are mapped to their general attitudes to risk as below, which are extended to their financial risk tolerance. Next, we gather information from Twitter to use as input for our model, which then outputs the predicted personality type of the Twitter user (investor) we are interested in. While our solution is based on Twitter text, it could easily be extended to textual posts on Facebook and other social media.

The aforementioned mapping is augmented with further self-reported risk related survey data to add another data input in assessing individual FTR.

Risk Ranking	Personality Type	MBTI Classification	FTR
1	Sensing Judging Personality	ISFJ, ISTJ, ESFJ, ESTJ	Very Low
2	Intuitive Judging Personality	INFJ, INTJ, ENFJ, ENTJ	Low
3	Sensing Perceiving Personality	ESFP, ESTP, ISFP, ISTP	High

[1] Role of Optimism Bias and Risk Attitude on Investment Behaviour
https://www.scirp.org/journal/paperinformation.aspx?paperid=91776

[2] Here's How Much of a Risk-Taker You Are, Based On Your Personality Type
https://www.psychologyjunkie.com/2018/10/13/heres-how-much-of-a-risk-taker-you-are-based-on-your-personality-type/

4	Intuitive Perceiving Personality	ENFP, ENTP, INFP, INTP	Very High