Initial Report of Group RTMST1

Real-Time Wine Sensing Tool

by

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Project Vision:

- The current methods of analysing the quality of a vintage of wine is extremely intrusive, resulting in the loss of product as well as being quite labour intensive. These methods are not economic and due to this new technology, that can be applied to the wine industry is being developed. This technology is known as Spectral Change and utilises photonics and machine learning to properly monitor and assess the quality of wine through its spectral fingerprint. The key stages of the wine will be tracked to help wine makers determine the quality of their wine in a much less intrusive and labour-intensive manner.
- The benefit of being able to do this comes mainly in by reducing the labour costs and with more accurate measurements also the loss of less wine to spoilage. This will assist winemakers produce a more quality product while also reducing costs throughout the process.

Customer Q&A:

Firstly, we asked the client for more of a specification on the problem, which is creating a dashboard for a user to view the results of data analysis. The particular analysis to be carried out on the data was given out in the product description earlier. We also, together with the client, created user stories for the product backlog and sprint backlog. We asked the client for details on how the data will come but details were not given. Potential follow up questions were written down after the meeting as a team and will be listed down below.

The kickoff meeting started slowly with the team asking for details about the project from the client. We then moved onto creating user stories for the product backlog and sprint backlog. If we had time to do the first meeting again, we would have prepared more user stories for the client to receive some immediate feedback. We could have also prepared some questions for the sprint planning to gain a better understanding for the first sprint. Next meeting, we will also have a meeting plan decided beforehand to keep the client meeting progressing more smoothly without getting sidetracked. Some follow up questions we have for the customer are as follows:

- Will there be non-technical customers using the product? If so, what will they need to see?
- Will the product be used across multiple sites, if so, is there a need for security: user authentication and privacy?
- Will we be able to receive client feedback, will we have demo meetings with the client?

Users:

- Executive from winemaking: The executive user will refer to the live dashboard frequently. However, the executive user does not have extensive knowledge of different wines. The major task of the executive user will be to manage sales and keep a track of the wine stocks. Agreeing with the sales and marketing personnel the type, style, and quality of wines that need to be produced so they will meet the demands of the market will be the task that comes under the executive user.
- Wine historian: Wine historians can use relevant data to study the origin of Australia's famous Shiraz red wine.

- Wine maker: The winemaker has to perform mandatory lab tests to observe the progress of the grapes, examine their quality, and decide the perfect time for harvest. The winemaker also provides the technical information for the winery records and helping to write wine descriptions and tasting notes for the winery catalogs. Providing the information and helping to write features and other pieces about the winemaking process. Detecting outlier, Fermentation tracking, and Malolactic acid tracking are the fundamental tasks that winemaker has to focus.
- Wine taster: Wine tasters are required to use their understanding and skills in order to perceive the different features of wine. In addition, they are also expected to explain their insights in fundamental terms to the audience which does not have sufficient knowledge about wines. They are also expected to find out about the quality of wines by checking the conversion of grape juice into wine or sugar into alcohol.

Software Architecture:

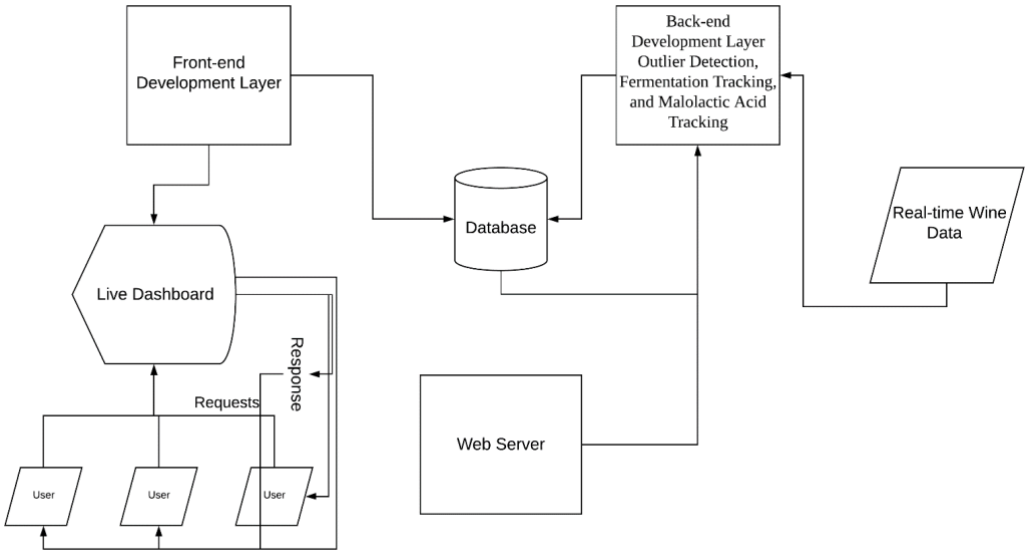

Figure 1. Basic architecture for RTMST application.

Our goal is to create an application that can run in real-time and provide analysis such as Outlier Detection, Fermentation Tracking, and Malolactic acid track. Thus, it is essential to create such architecture that can process/read real-time data and run our machine learning-based prediction models in the back-end. Also, in the application to give users live experience, the architecture consists of a live dashboard and thus it is necessary to communicate between front-end and back-end for real-time analysis. Thus, choosing the architecture provided in Figure 1 will be an efficient choice where front-end and back-end do their parts and communicate with each other for real-time analysis.

Tech stack and Standards

For the Real-Time Wine Sensing tool, we have decided to use the following tech stack for the various areas.

Back-end Tech Stack:

- Python
- SQL/Panda (TBD)

Infra:

- Python

Front-end Tech Stack:

- HTML
- CSS
- JavaScript

Python was chosen as a back-end programming language because it is the language most suited to the task as there will be a lot of machine learning algorithms applied to the data. There are also several members in the team that have experience programming with Python so we will be at an advantage here. SQL/Panda was also tentatively decided as a language to be used in the case that we need a database for this project. As for the front-end tech stack, we decided a web interface would be the best method for creating a dashboard for users to interact with as HTML/CSS is quite well suited to creating User Interfaces.

The team has created a Discord channel with the client and all team members to communicate throughout the project. The IDE we have chosen to use is PyCharm as group members with previous experience coding in Python recommended this as the most suitable IDE.

The coding standard we have chosen is PEP 8, a style guide for Python Code. It gives outlines for the readability of code, including indentation style, where to place line breaks as well as guides for comments and naming conventions.

Group Meetings and Team Member Roles:

Our team meetings will take place recurring every Monday and Wednesday from 5.30 pm to 6.30 pm. The upcoming meetings will be fully virtual and take place on Zoom.

Our next sprint retrospective meeting will be on Monday 24th, 2020 at 10 am. This meeting will also be virtual and will take place on Zoom.

We have set up an additional feedback channel with the customer in Discord, where we frequently ask for feedback and improvising the experience.

The Scrum Master for the upcoming sprints is as follows:

- Sprint 1: Harnoor Bandesh (a1783911)
- Sprint 2: Harrison Greven (a1716640)
- Sprint 3: Ross Pickett (a1671245)
- Sprint 4: Jay Hansen (a1670268)
- Sprint 5: Vandit Gajjar (a1779153)