📘 Sprint Review for Sprint 3

🔲 Introduction 🔗

This document provides a comprehensive review of Sprint 3 for the project aimed at developing a Q&A platform utilising the Furhat robot, augmented by capabilities such as dynamic data processing and image recognition. This sprint focused on integrating and refining the components established in previous sprints, notably completing the LLM training, enhancing the RAG framework, and initiating testing phases. Significant changes include the shift from standard UI design tasks to deploying functionalities directly on the Furhat robot and implementing image recognition features.

📅 Sprint 3 Achievements and Completed Requirements 🔗

Objective Accomplished 🔗

- **Enhanced RAG Framework**: Improvements and optimisations were successfully made to the RAG framework, ensuring better accuracy and response relevance.
- **Deployed on Furhat Robot and Implemented Image Recognition**: Transitioned from traditional UI tasks to integrating interactive capabilities and image recognition directly on the Furhat robot, enhancing user interaction and functionality.

🧑‍🤝‍🧑 Discussion Conducted in the Sprint 🔗

The discussion during Sprint 3 focused on the significant strategic shifts and technical implementations crucial to the project's progression. Key areas of focus were the integration of functionalities directly on the Furhat robot, the introduction of advanced image recognition capabilities and the omission of URL entering functionality. These changes marked a central redirection from previous plans primarily centered around traditional UI development.

Integration with Furhat Robot: The decision to shift from developing a standard user interface to integrating interactive functionalities directly onto the Furhat robot was driven by the need to enhance user interaction directly through the robot. This approach leverages the robot's presence and capabilities, offering a more intuitive and engaging user experience.

Implementation of Image Recognition: The addition of image recognition technology was aimed at enhancing the robot's ability to interact more dynamically with users by interpreting visual inputs. This feature supports visually impaired users and enriches the interaction for all users by allowing the robot to respond not just to textual or auditory inputs but visual cues as well.

Decision to Omit URL Entry Feature: Initially, the project scope included functionality for users to enter URLs directly into the platform, which the system would then process to extract and utilize information. However, upon deeper evaluation and stakeholder discussions, this feature was deprioritised and ultimately removed from the project scope. Because of the fact that inputting URL and extracting information

from the website would take a considerable amount oftime, and further embedding the data would take even more time. We prioritised the response time of the interaction.

Completed Requirements 🔗

Requirement	User Story	Estimation	Priority	Jira Issue
Furhat Robot interaction Must be able to filter and sort information based on user-defined criteria	U2.2: As a user, I want the robot to filter and sort information based on my provided criteria (e.g., location, size, function of the room), so that I can find what I'm looking for more efficiently.	MEDIUM	SHOULD HAVE	☑ C2QK-4: Must be able to filter and sort information based on user-defined criteria such as location, size, and function of the room. 已完成
Image Recognition Chat Must be able to describe the key information based on the website summary to visually impaired user.	U2.3: As a visually impaired user, I want the robot to describe images and visual content from websites, so that I can comprehend visual information that I cannot see.	LARGE	COULD HAVE	☑ C2QK-6: Must be able to describe the key information based on the website summary to visually impaired user. 已完成
Cyber Security Must protect user's private information and provide clear privacy policies.	U1.4: As a user, I want the Q&A platform to protect my personal information and provide clear privacy policies, so that I can ensure the security and confidentiality of my data.	MEDIUM	MUST HAVE	☑ C2QK-7: Must protect user's private information and provide clear privacy policies. 已完成
Furhat Robot Deployment Support text interaction in the robot interface.	U1.1: As a user, I want to be able to support text interaction in the robot interface, so I can type and express what I need to query.	SMALL	MUST HAVE	This is a must have because it is the basic function of user interaction. It may involve only the front end and is expected to be small.
Furhat Robot Deployment Generate an livechat box when asking the question.	U1.2: As a user, I want the robot to generate an livechat box when I ask my question, so I can gain the information and answer I need directly.	SMALL	MUST HAVE	This is a must have because it is the basic function of user interaction. It may involve only the front end and is expected to be small.
Furhat Robot interaction Must summary the information quickly.	U2.1: As a user, I want to interact with the Furhat robot in a conversational manner to obtain information directly, so that I can save time by not having to search and filter	LARGE	MUST HAVE	This is a must have because the robot needs to feedback the information needed by the user, and involves the model, UI and robot interaction, which is

	information on the web myself.			expected to be a large project.
Domain-Specific Language Model function Must provide accurate information of Melbourne Connect to user when asked.	U3.1: As a user interested in services offered at Melbourne Connect, I want the robot to provide detailed information (such as room's information, location and provided services) from websites of Melbourne Connect, so that I can clearly understand the overview of Melbourne Connect without navigating through those websites.	LARGE	MUST HAVE	This is a must have because the language model needs to analyse user problems and obtain relevant information of Melbourne Connect, the project is expected to be large due to the model involved.
Furhat Robot interaction Must be able to translate web content from various of languages.	U2.4: As a user learning a new language, I want the chatbot to translate content from websites in foreign languages(e.g. from Chinese to English), so that I can understand the content without being fluent in the language.	LARGE	COULD HAVE	This is a could have because it is based on the language model to complement the functionality. The project is expected to be large due to the model involved.

Requirements Development Progress 🔗

- **LLM agent developing**: Fully completed with the LLM now capable of handling complex queries and processing extensive data efficiently.
- **Furhat Robot and Image Recognition Integration**:
  - **Progress**: Completed.
  - **Details**: Integration included setting up the robot to handle direct user interactions through voice and image inputs, and deploying image recognition algorithms capable of interpreting visual cues and responding accordingly.
  - **Challenges**: Adjusting the integration to accommodate real-time processing and response generation without latency.

Data Collection and Preparation 🔗

- Continued refinement of data collection techniques to enhance the quality of data used for ongoing training and updates to the LLM.

Infrastructure Deployment 🔗

- Established a stable and robust infrastructure capable of supporting the advanced features of the Furhat robot, including real-time image recognition and data processing.

Technology Utilised 🔗

- Continued use of Python for backend developments.
- Deployment technologies focused on seamless integration with the Furhat robot's existing systems.

Incompleted or Omitted Requirements 🔗

Domain-Specific Language Model function Must be able to scraping and synthesizing information from multiple webpages at a time to provide a comprehensive overview.	U3.2: As a prospective student interested in applying to the University of Melbourne, I want to be able to gather comprehensive and up-to-date information from various webpages about the university, so that I can make an informed decision about my application.	LARGE	COULD HAVE	• The complexity of crawling and embedding data from all URLs under a page is significant. Given that each webpage requires considerable time to crawl and process, extending this to multiple pages further compounds the time and effort needed. This can make it challenging to provide timely and efficient access to information. • To optimize the system's response speed and handle the high volume of data from different webpages effectively, extensive process design and engineering effort are required.

📈 Sprint 3 Insights 🔗

- **Strengths**: The project demonstrated significant strengths in adapting to new technological requirements, particularly in deploying functionalities directly on the Furhat robot and incorporating image recognition.
- **Areas for Improvement**: While the deployment on the robot was successful, further refinement in user interaction flow and voice recognition accuracy is needed.
- **Lessons Learned**: The importance of flexibility in project plans was underscored, as adjustments from UI development to robot-centric deployment required quick adaptation and resource reallocation.

💡 Recommendations for Future Sprints 🔗

1. **Finalise User Interaction Refinements**:
   - Concentrate efforts on finalising the interaction design of the Furhat robot. Ensure that the user experience is as intuitive and seamless as possible to meet end-user expectations.
   - Conduct final usability testing sessions with real users to validate the interaction flow and make any necessary adjustments.
2. **Complete Enhancement of Image Recognition Features**:
   - Finalise the development of the image recognition capabilities to ensure they are robust, accurate, and operate in real-time without delays.
   - Implement edge cases and stress tests to guarantee that the image recognition works reliably under various conditions.
3. **Comprehensive Testing and Release Preparation**:
   - Intensify testing efforts to cover all components extensively, including functional, integration, system, and acceptance testing.
   - Prepare and refine deployment scripts and user manuals to ensure smooth rollout and support post-launch.

⏳ Next Steps for Sprint 4 🔗

1. **Refinement and Optimisation**:
   - Dedicate the sprint to refining the interaction capabilities of the Furhat robot.
   - Optimise the backend and frontend integration to ensure the system operates fluidly during user interactions.
2. **Finalise Image Recognition Enhancements**:
   - Complete all planned enhancements to the image recognition technology, ensuring that it functions accurately across different scenarios and lighting conditions.
   - Collaborate with domain experts to validate the functionality and accuracy of the image recognition system.
3. **Execution of an Extensive Testing Protocol**:
   - Implement a testing protocol that encompasses all aspects of the system, ensuring every component is thoroughly vetted.
4. **Launch Preparations**:
   - Conduct a final review with all stakeholders to ensure every aspect of the project aligns with business objectives and user needs.

Burndown Chart Sprint 3