Furhat Robotics

QA-Koala

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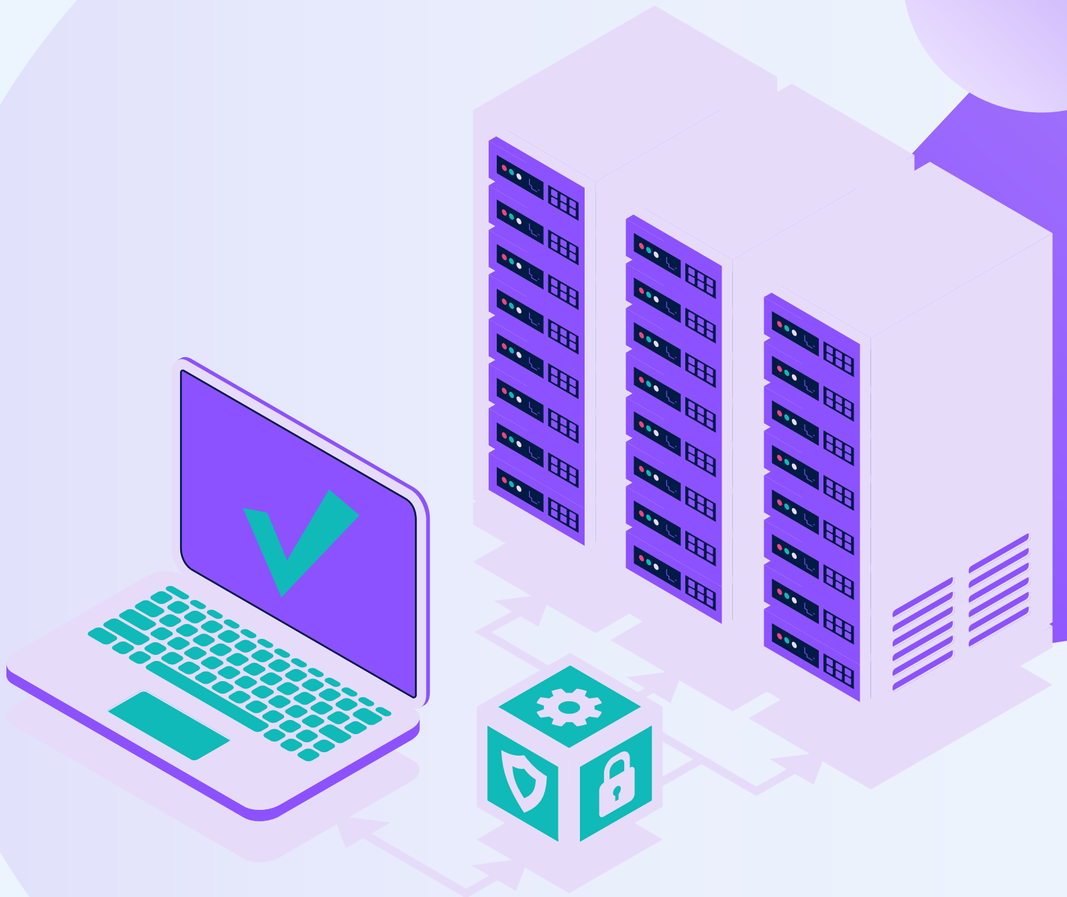

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PROJECT MANAGER

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Presentation Structure

1.Introduce the project

Project scope, what is about, objective, product function.

2.Technical Details

Technical details including architecture and User interaction flow

3.Project demonstration

2 mins video for demo to show what our program can do

4.Team Collaboration

How we setup our meeting, what we have finished and how we manage our process

5.Project Progress

User Stories and Team Progress Presentation

SCOPE OF OUR PROJECT

Furhat Robot Skill development

Objective

- Deliver an algorithm with web-based chat functionality
- Deploy it to the Furthat robot.

Non-Functional Requirementsts

- Quickly respond to user questions
- Avoid outputting information unrelated to the webpage.

Boundaries and Exclusions

- Furhat Robot Maintenance
- Furhat Robot Hardware Customization and Modification

Constraints

- Time constraint
- Cost constraint

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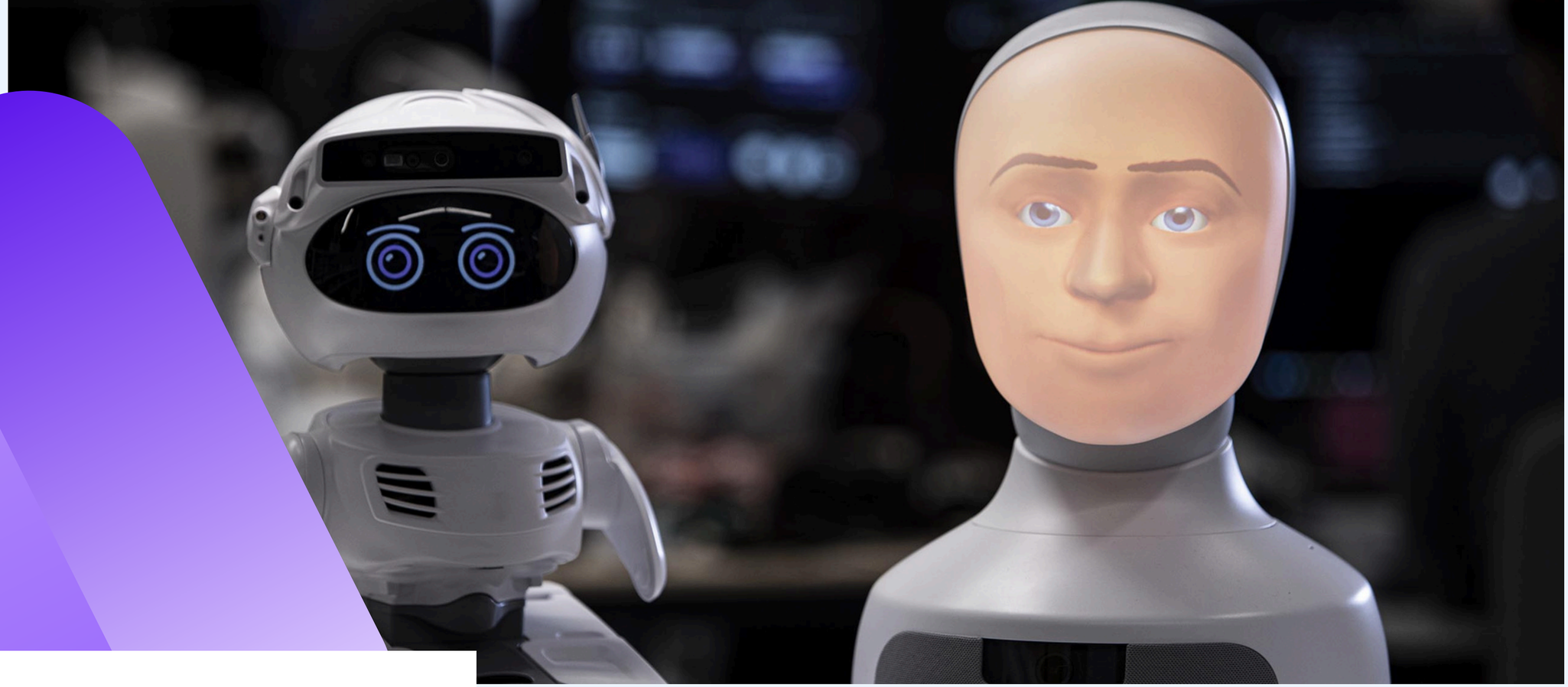

ABOUT OUR PROJECT

What is furhat robot?

A social robot to help people interacting with technology the way we humans interact with each other

By applying various human-computer interaction features to the Furhat robot, people can experience cutting-edge human-computer interaction technology as if they were interacting with human being.

COMPLETED OBJECTIVES

Provide Web browse Skills to Furhat Robot

Web Crawler Development

Designed an algorithm capable of crawling website information and images.

LLM Agent Design

Multiple agents collaborate with each other to ensure the stability of the responses. We use **GPT-4o** as our chat model.

RAG System Design

Designed a retrieval-augmented system(RAG) capable of obtaining images and text information related to the query.

Integrate our algorithm with furhat robot

Deploy it using furhat remote API

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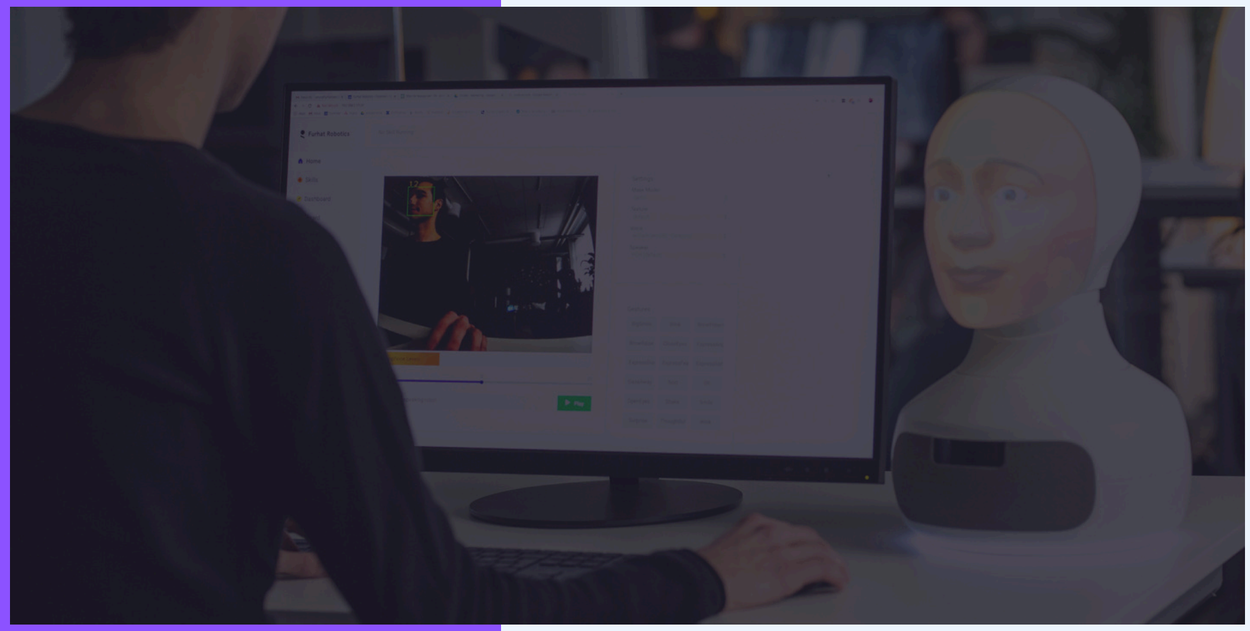

FUNCTION OF OUR PRODUCT

A smart web browser chat bot

Our algorithm can accurately match the information needed by users from websites and organize it into structured language to answer user's questions.

Web Information Extraction

Our algorithm can extract all the information including staic, dynamic information and images from website

Web Text Based Chat

User can ask any question about the website

Web Image Based Chat

User can ask any question about the image in the website

System Architecture

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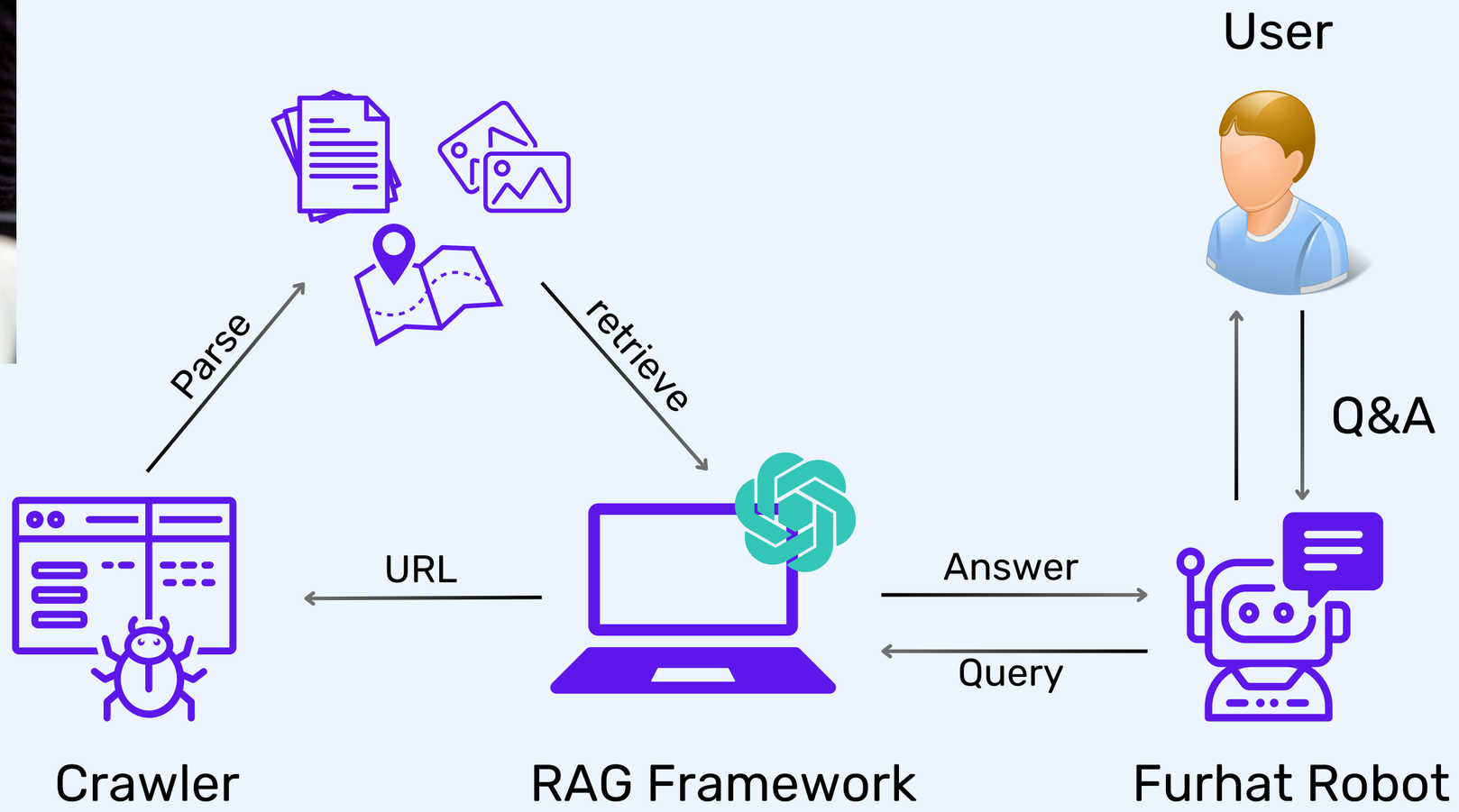
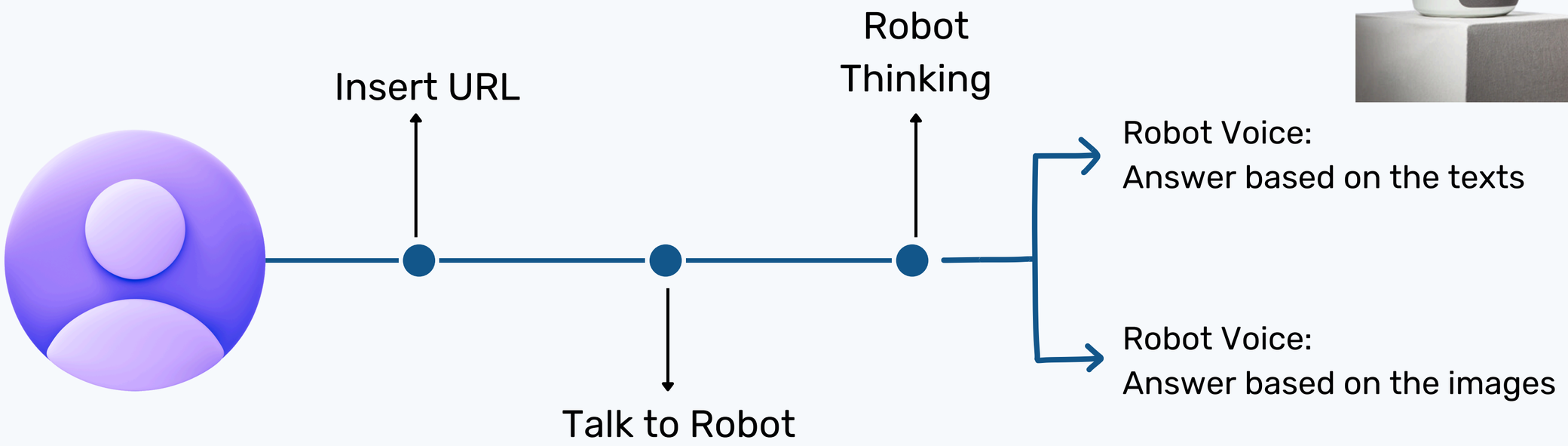


The Process of User Interaction



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Website Chat

Website Summary

Project Demonstration

Website Image Chat

Team Communication

Communication Tools

- **Slack:** Daily updates and quick communications.
- **Trello:** Task tracking and sprint progress.
- **Confluence:** Sharing documentation and project insights.

Communication Strategy

- **Stand-Up Meetings**
- **Sprint Planning Meetings**
- **Sprint Review Meetings**
- **Sprint Retrospective Meetings**

Effective Practices

- **Open Communication Policy:** Allows all team members to voice concerns and suggestions.
- **Regular Feedback Sessions:** Improve processes and workflows.
- **Cross-Functional Meetings:** Foster understanding and cooperation among different roles.

Technical Issues & Solutions

Web Scraping

- **Issue**: Dynamic content hard to capture.
- **Solution**: Used Selenium for dynamic rendering.

Stale Data Elements

- **Issue:** Frequent StaleElementReferenceException.
- **Solution:** Implemented automatic element refresh.

Text Formatting

- **Issue:** Excess whitespace in extracted text.
- **Solution:** Applied regex for text normalization.

RAG Optimization

- **Issue:** Slow data retrieval for RAG.
- **Solution:** Optimized retrieval algorithms.

Prompt Engineering

- **Issue:** Initial prompts lacked relevance.
- **Solution:** Tailored and refined prompts.

Middleware Sync

- **Issue:** Text-to-speech timing off.
- **Solution:** Developed timing adjustment middleware.

Completion: User Stories & Functions

Domain-Specific Functions

- Accurate information on the Melbourne Connect website.
- Summary of web content for quick understanding.
- Text information from the website scraped.
- Images from the website scraped.

Furhat Robot Interactions

- Filtering and sorting information.
- Avoiding unrelated questions.
- Text and livechat interaction support.
- Image-based livechat interaction support.
- Map-based livechat interaction support.

Effective Practices

- Image description for visually impaired users.
- Provide users with navigation information based on the site map.
- Protection of user's private information.

Completion: Deferred User Story

User Story

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.

Requirement

Must be able to scraping and synthesizing information from multiple webpages at a time to provide a comprehensive overview.

Estimation

HIGH

Priority

LOW

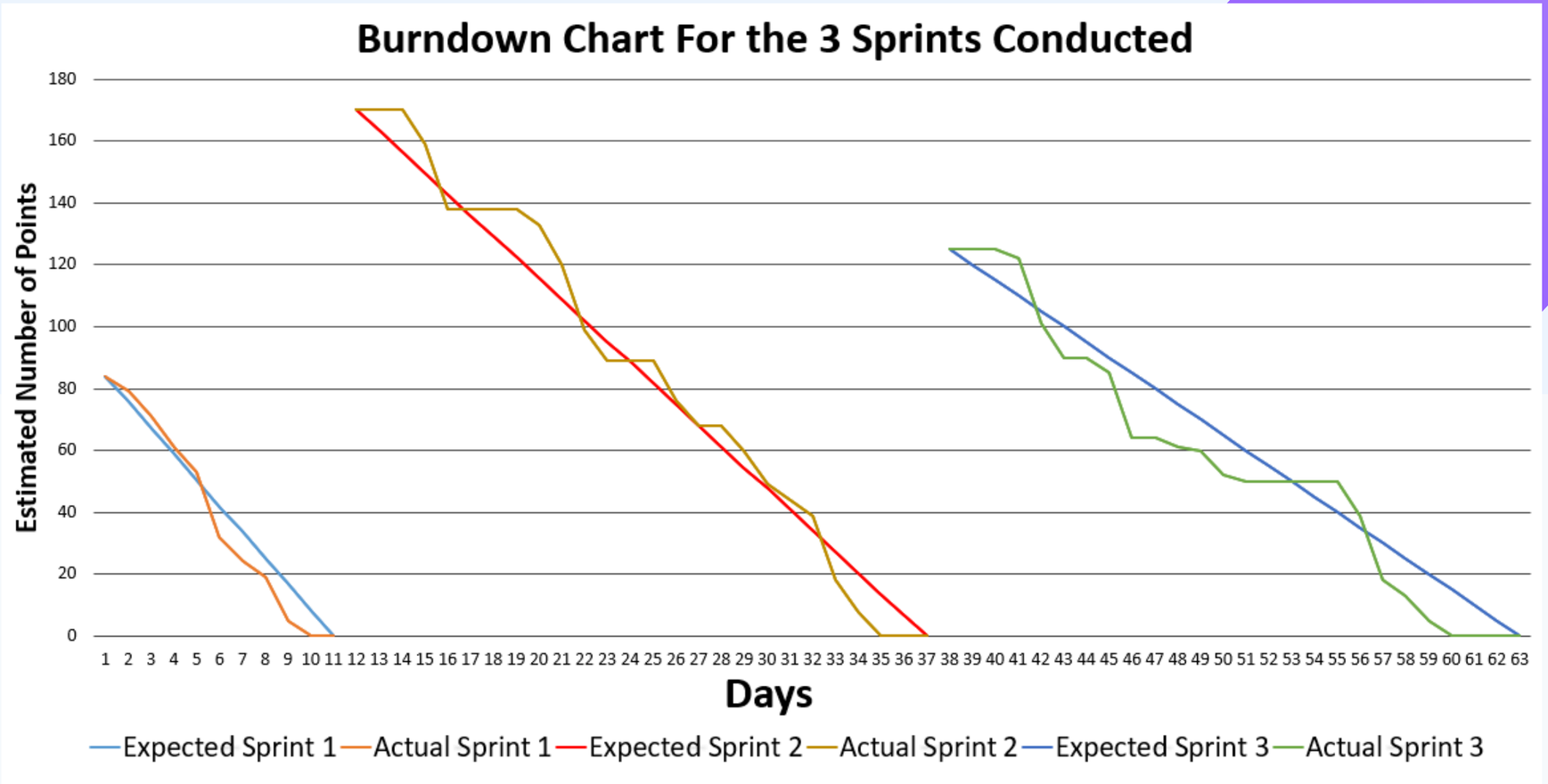
Issue

The **complexity** and **time consumption** involved in scraping and embedding data from multiple webpages are significant, especially in the context of real-time chat.

Completion: Burndown

Burndown

- Initial lag in progress was effectively managed.
- Achieved planned sprint goals by Day 60.
- One complex user story was deferred for strategic reasons.



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Thank You