

MICHIGAN STATE

UNIVERSITY

Project Plan Presentation

AI Recipe Converter

The Capstone Experience

Team Whirlpool

Ryan McLean
Samuel Chen
Cameron Lang
Ruitong Xu (Eric)

Department of Computer Science and Engineering
Michigan State University

Fall 2021



*From Students...
...to Professionals*

Functional Specifications

- Simplify user cooking experience by providing machine assisted cooking
- Recipes from popular cooking websites are converted to a machine-understandable format
- Users can access a website to modify existing recipes or create their own

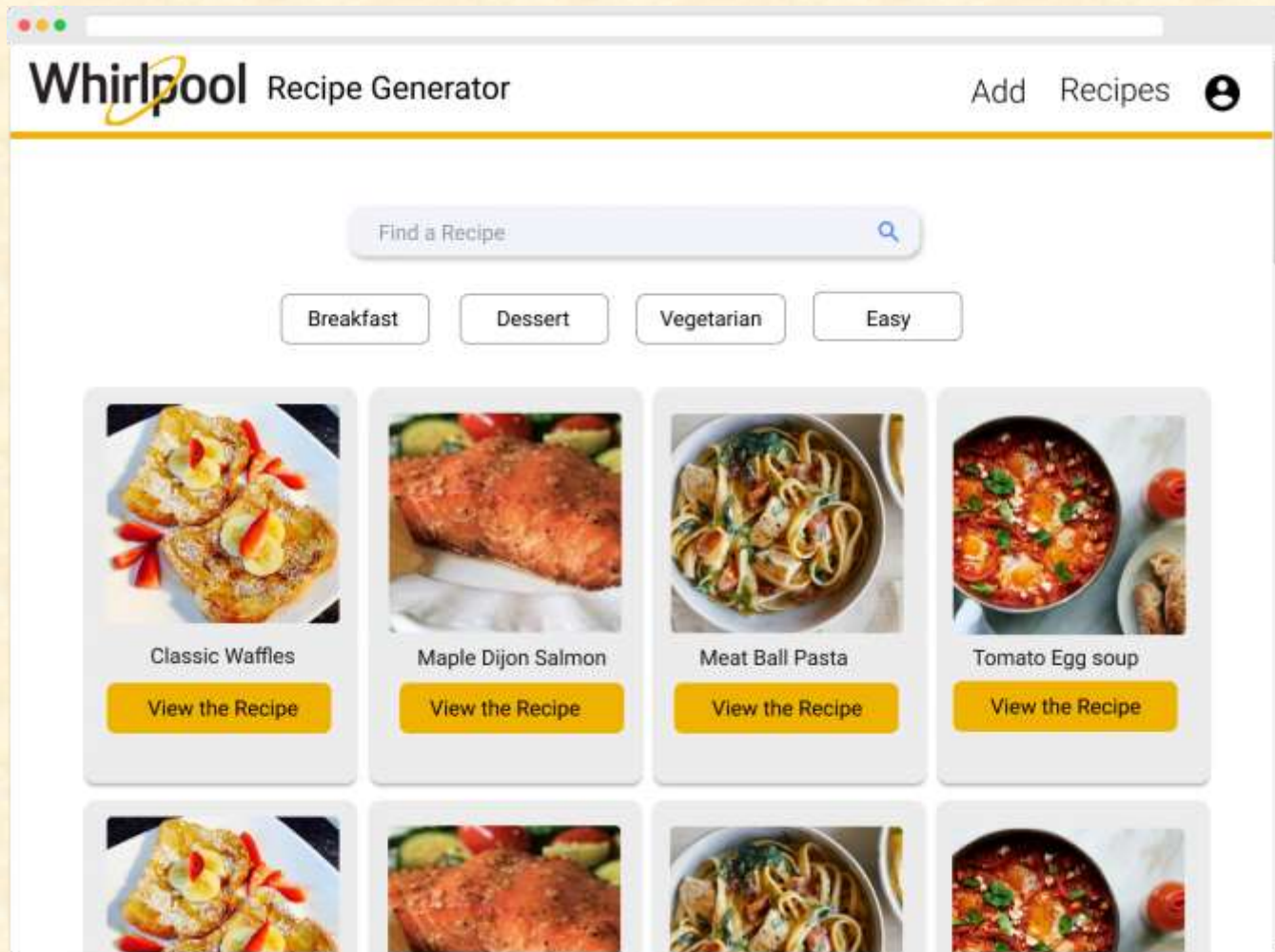


Design Specifications

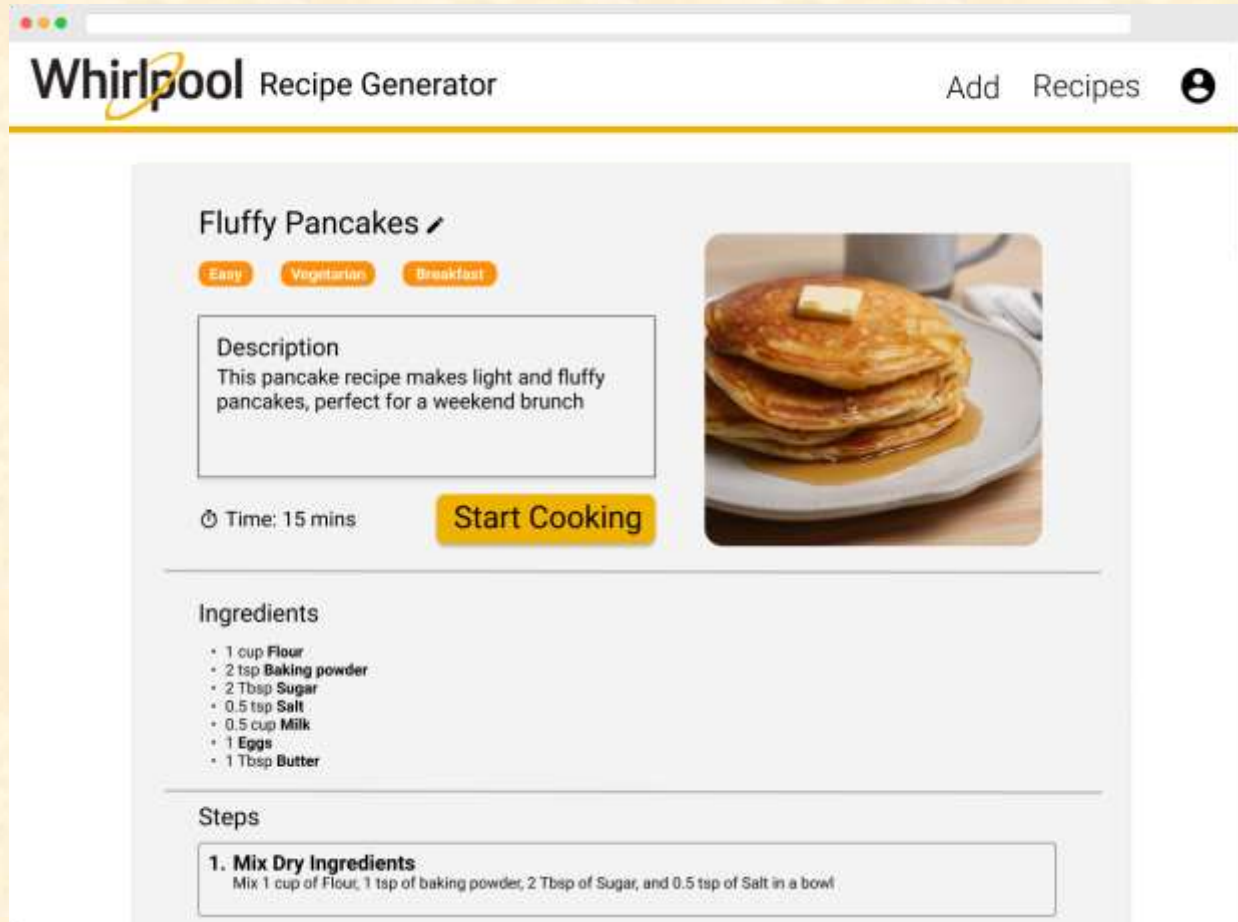
- Browse Recipes
 - Location for recipes that users can explore
 - Allow users to filter recipes using keywords
- Add/Edit Recipe
 - Allow the user to add and edit their own recipe details to be displayed on the cooking page.
- Recipe View
 - View list of recipes and view recipe instructions in human-understandable format.



Screen Mockup: Recipe Search



Screen Mockup: Recipe Info Page



Screen Mockup: Add Recipe

The screen mockup displays the 'Whirlpool Recipe Generator' interface. At the top left is the logo and the text 'Recipe Generator'. At the top right are the links 'Add Recipes' and a user profile icon. The main content area is divided into two sections: 'Ingredient 1' and 'Step 1'. The 'Ingredient 1' section contains a 'Name' input field, a 'Quantity' input field, a 'Unit' input field, and three radio buttons labeled 'Standard', 'Metric', and 'Ordinal'. Below these fields is a yellow 'Add Ingredient' button. The 'Step 1' section contains a 'Title' input field, a 'Description' text area, an 'Add Media' button, a 'Media Type' input field, a 'Cook Time' input field, a 'Timer Value' input field, a 'Step Type' input field, and a 'Temperature' input field. Below these fields is a yellow 'Add Step' button.

Whirlpool Recipe Generator Add Recipes

Ingredient 1

Name

Quantity Unit Standard Metric Ordinal

Add Ingredient

Step 1

Title Description

Add Media

Media Type

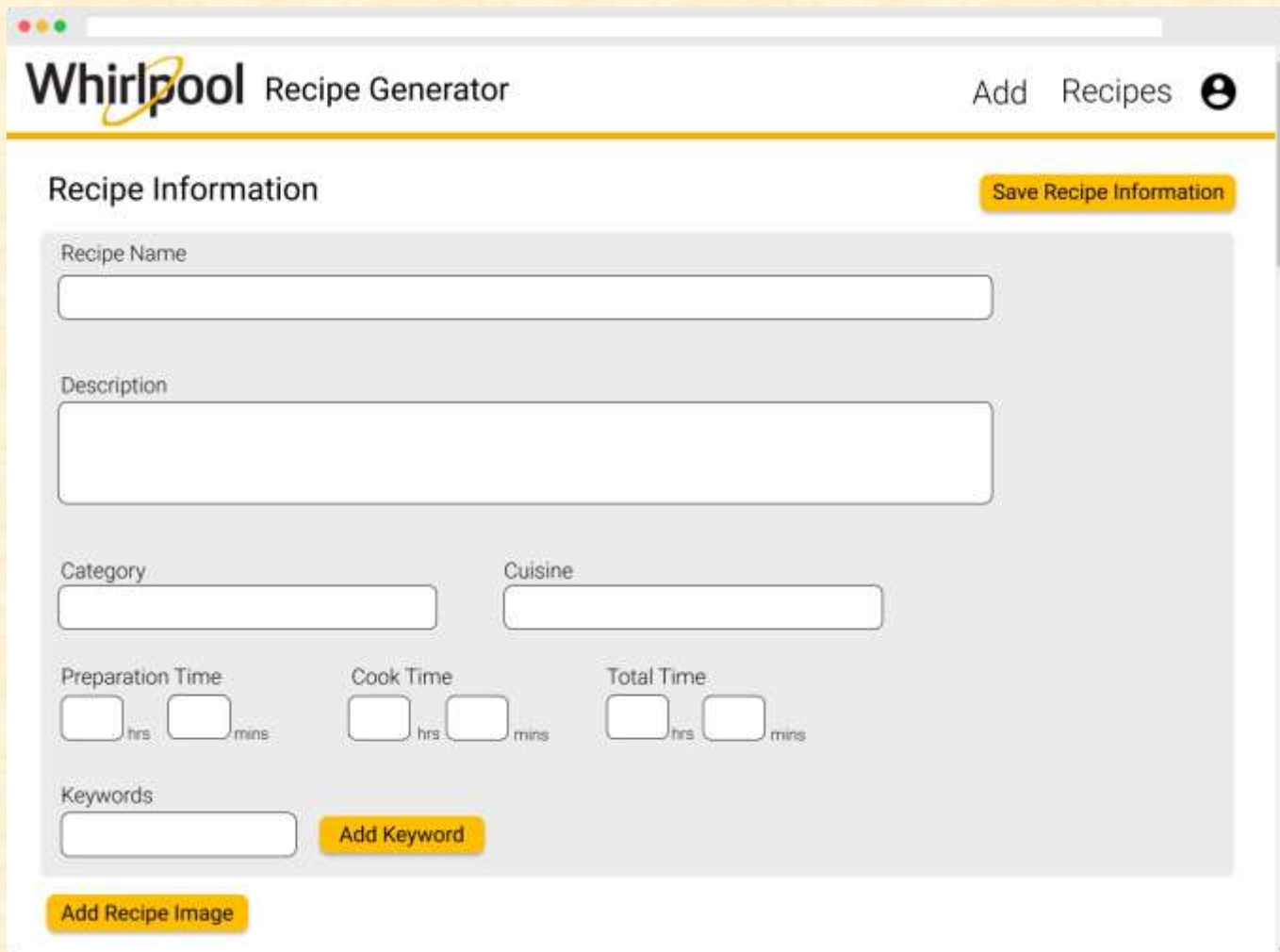
Cook Time Step Type

Timer Value Temperature

Add Step



Screen Mockup: Add Recipe Cont.



The image shows a web browser window with the title "Whirlpool Recipe Generator". The page has a yellow header bar with the "Whirlpool" logo on the left and "Add Recipes" with a user icon on the right. The main content area is titled "Recipe Information" and contains several form fields and buttons. At the top right of the form area is a yellow button labeled "Save Recipe Information". The form fields include: "Recipe Name" (a single-line text input), "Description" (a multi-line text area), "Category" (a single-line text input), "Cuisine" (a single-line text input), "Preparation Time" (two input boxes for hours and minutes), "Cook Time" (two input boxes for hours and minutes), and "Total Time" (two input boxes for hours and minutes). Below these is a "Keywords" section with a single-line text input and a yellow "Add Keyword" button. At the bottom left of the form area is a yellow "Add Recipe Image" button.

Whirlpool Recipe Generator

Add Recipes

Recipe Information

Save Recipe Information

Recipe Name

Description

Category Cuisine

Preparation Time Cook Time Total Time

hrs mins hrs mins hrs mins

Keywords

Add Keyword

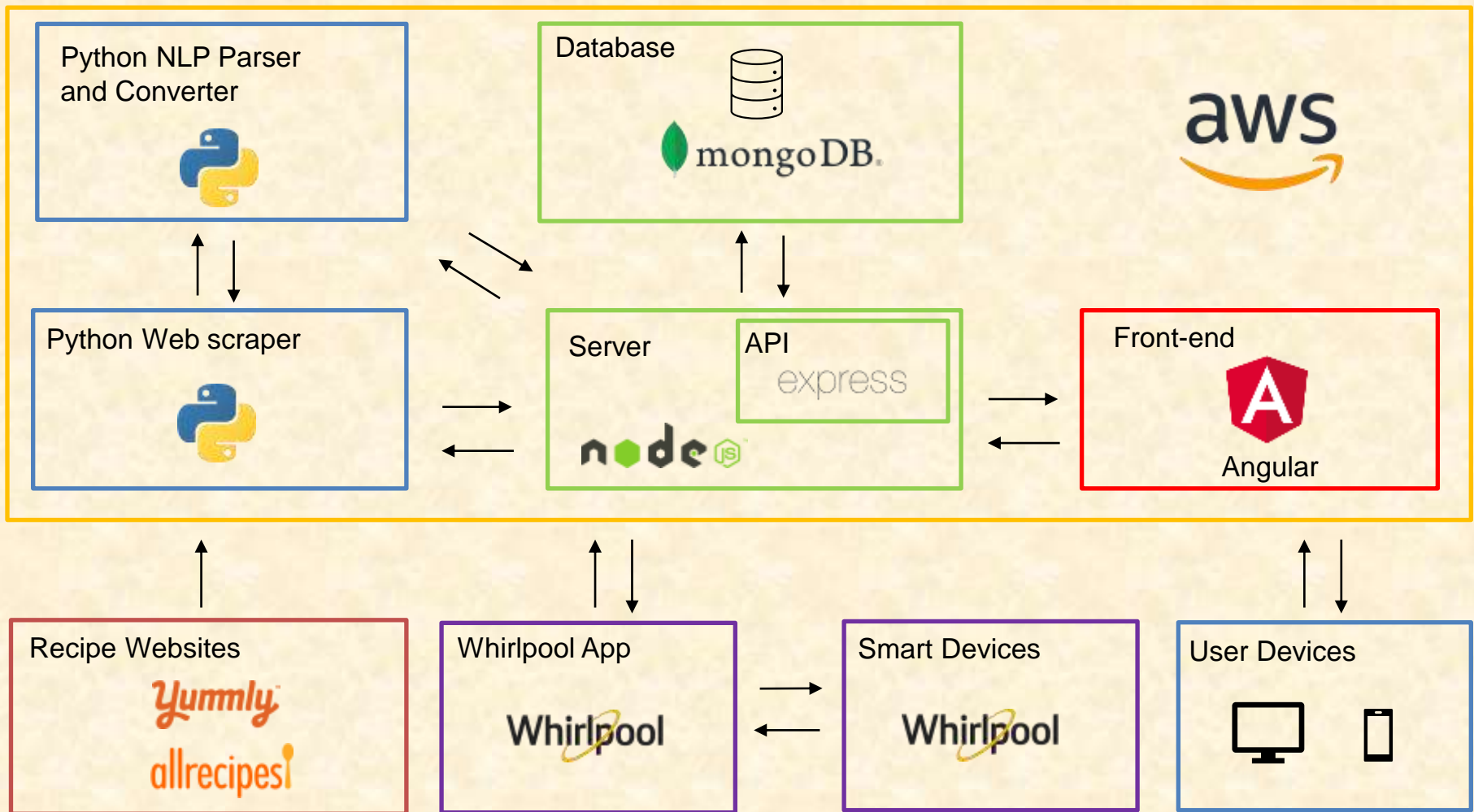
Add Recipe Image

Technical Specifications

- Python web scraper for pulling recipe information from cooking websites
- A python NLP parser is used to identify the ingredients type, quantity, temperature, and cooking time
- Frontend webapp for viewing and editing recipes
- MongoDB is used to store recipes
- AWS EC2 is used to host webapp
- AWS Lambdas are used to run the web scraper and parser



System Architecture



System Components

- Hardware Platforms
 - Laptop/Mobile Device for UI
 - Whirlpool cooktop
- Software Platforms / Technologies
 - Angular
 - AWS
 - Express
 - MongoDB
 - NodeJS
 - Python



Risks

- Natural Language Processing
 - The theory of natural language processing is complex
 - Investing research done by Stanford on natural language processing of recipes to understand and guide our approach
- Web Scraping
 - Non-uniform html locations on linked websites
 - Look into using regular expressions to find similar storage locations
- Testing Software
 - We do not have access to the hardware
 - Possible hardware access or remote trials in discussion with Whirlpool
- Lack of Training Data
 - Natural language processing requires a large amount of training data
 - Discuss with appropriate faculty and reference Stanford study source on NLP



Questions?

?

?

?

?

?

?

?

?

?

