

**SINGAPORE POLYTECHNIC  
SCHOOL OF DIGITAL MEDIA AND INFOCOMM TECHNOLOGY**

**IT8302 AI-HUMAN INTERFACE**

**CA2**

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Submitted By:

P7359221      LIM YUAN HER

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# 1 Introduction

## 1.1 Description

Foodiebot is a food-related chatbot which provides nuggets of food-related information and nutritional content with added capability of providing whole meal recommendations based on individual preferences/ tastes.

## 1.2 Purpose

The chatbot serves to provide the following capabilities:

1. Provide meal plan suggestions based on nutritional requirements.
2. Provide food-related titbits e.g. trivia, jokes.
3. Provide nutrition value of food item.

# 2 Integration

The URL of the fulfilment webhook hosted in Heroku is <https://foodiebot-api.herokuapp.com/>. The Facebook interface is at <http://m.me/111337007003924> and for Telegram is at <http://t.me/foodiebotbot>. The web integration is at <https://bot.dialogflow.com/f56ec170-27ff-4724-a191-66c1f377f943>.

## 2.1 Firebase

The webhook writes the recommended meal plan details to the Firebase database.

## 2.2 API

The webhook uses the Spoonacular REST API [2] which can be accessed at <https://spoonacular.com/food-api/docs> to retrieve food-related content as required by the intents of the chatbot. Specifically, 4 REST API functions are used, namely:

- Generate Meal Plan - Generate a meal plan with three meals per day (breakfast, lunch, and dinner).
- Get a Random Food Joke - Get a random joke that is related to food.
- Get Random Food Trivia - Returns random food trivia.
- Guess Nutrition by Dish Name - Estimate nutrients of dish based on title.

The table lists the mapping of each intent to the webhook function and the corresponding REST API function used for retrieving the required information:

:

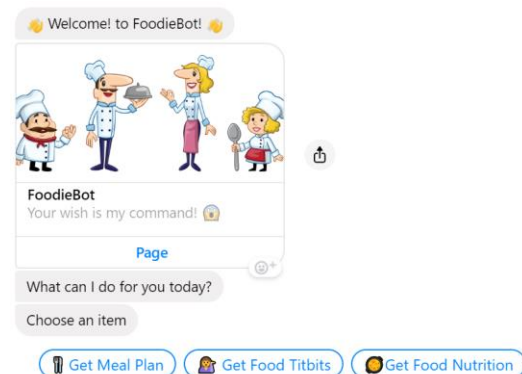
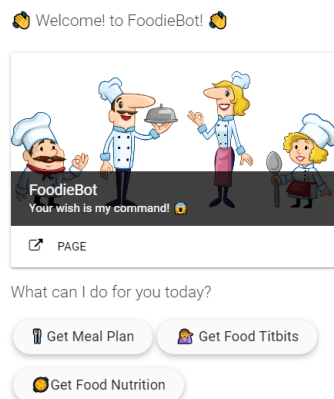
s/n	Intent	Purpose	WebHook Function	API
1	welcome	Greet user and offer services	welcome	-
2	fallback	Handles unexpected users' responses	-	-
3	mealplan-start	Gets meal plan recommendation based on user specified criteria i.e. timeframe (day/week), caloric target, diet type and excluded ingredients	getMealPlanInput	-
4	mealplan-getDietTypeYES	Get Diet Type information from user	getMealPlanInputDietTypeYes	-
5	mealplan-getDietTypeNO	If user selected not to specify Diet Type information	getMealPlanInputDietTypeNo	-
6	mealplan-getExcludedIngredients	Get ingredients to be excluded from user	getMealPlan	<a href="https://api.spoonacular.com/mealplanner/generate">https://api.spoonacular.com/mealplanner/generate</a>
7	foodtitbits-start	Gets food-related titbits i.e. food trivia information, food joke	getFoodTitBitChoice	-
8	foodtitbits-getTrivia	Get food trivia information	getFoodTrivia	<a href="https://api.spoonacular.com/food/trivia/random">https://api.spoonacular.com/food/trivia/random</a>
9	foodtitbits-getJoke	Get food-related joke	getFoodJoke	<a href="https://api.spoonacular.com/food/jokes/random">https://api.spoonacular.com/food/jokes/random</a>
10	foodnutrition	Gets food nutritional value based on user specified food keyword.	getFoodNutrition	<a href="https://api.spoonacular.com/recipes/guessNutrition">https://api.spoonacular.com/recipes/guessNutrition</a>

**Table 1 – Intent-WebHook-API Mapping**

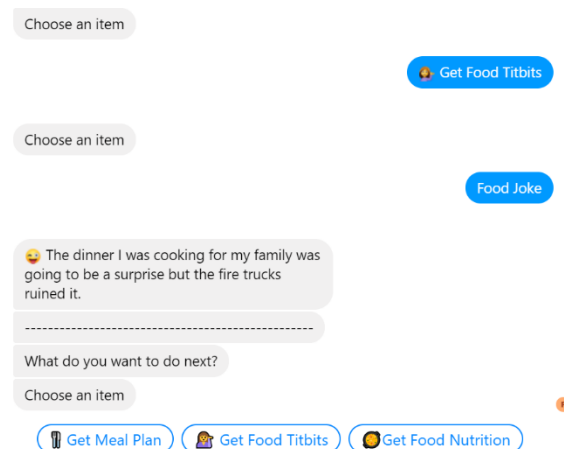
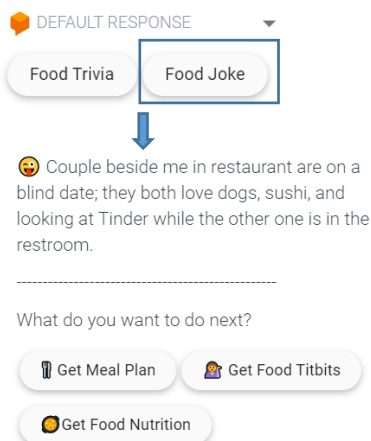
## 3 Screenshots

### 3.1 Chatbot Interaction/ Responses

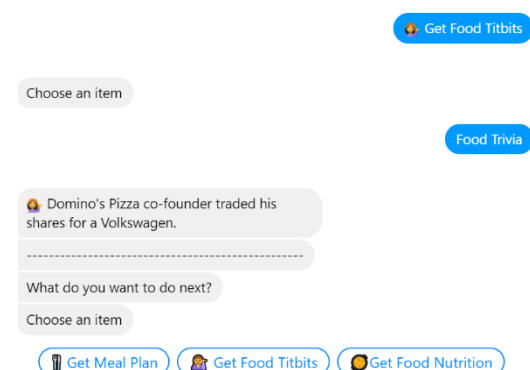
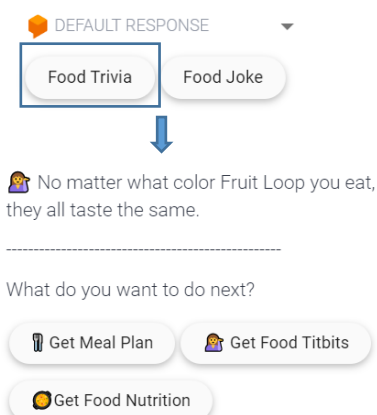
#### 3.1.1 Main



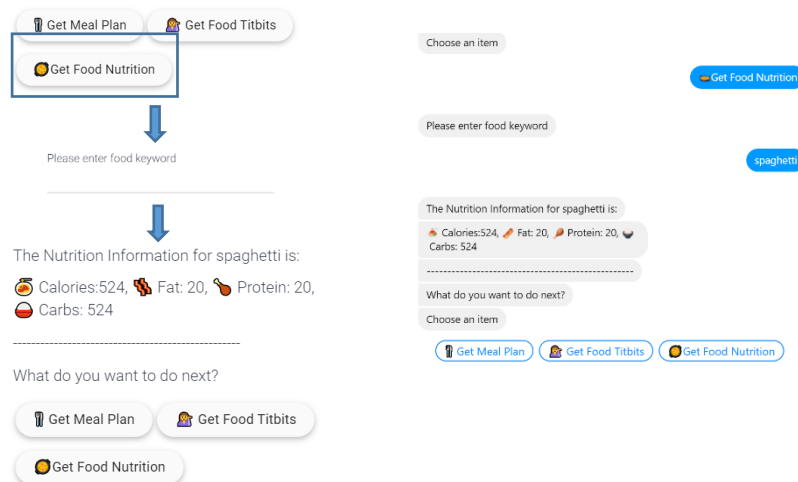
#### 3.1.2 Get Random Food Joke



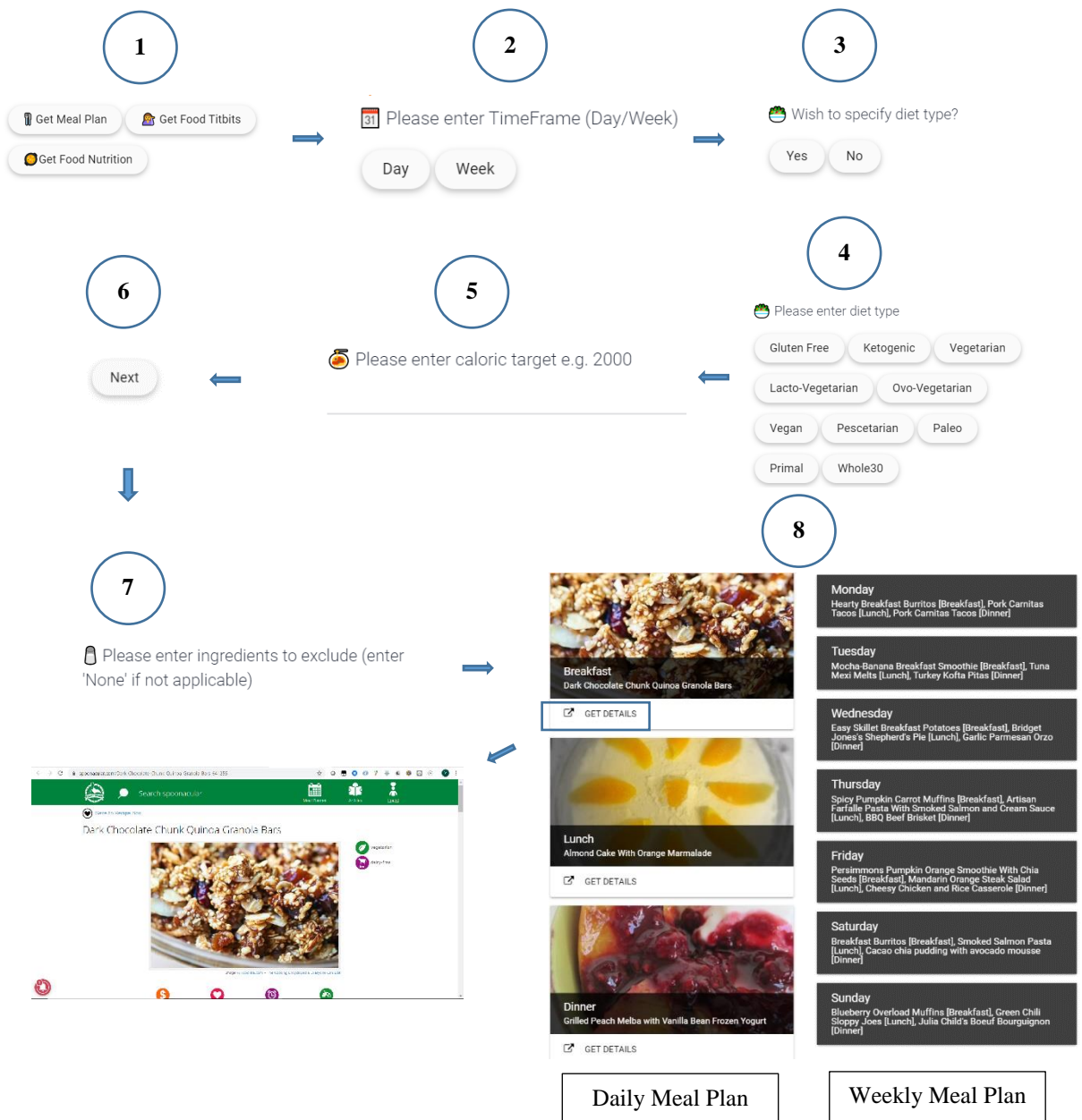
#### 3.1.3 Get Random Food Trivia



### 3.1.4 Guess Nutrition by Dish Name



### 3.1.5 Generate Meal Plan



## 3.2 Intents/ Entities/ Contexts/ Training Data

### 3.2.1 Intents

**Intents** CREATE INTENT

Search intents

☐ fallback Add follow-up intent

- foodnutrition
- foodtitbits-start ^
- ↳ foodtitbits-getTrivia
- ↳ foodtitbits-getJoke
- mealplan-getExcludedIngredients
- mealplan-start ^
- ↳ mealplan-getDietTypeYES
- ↳ mealplan-getDietTypeNO
- welcome

### 3.2.2 Entities

**Entities** CREATE ENTITY

CUSTOM SYSTEM

Search entities

@ DietType

@ TimeFrame

**DietType** SAVE

☒ Define synonyms ☐ Regexp entity ☐ Allow automated expansion

☐ Fuzzy matching

Gluten Free	Gluten Free
Vegetarian	Vegetarian
Paleo	Paleo
Ketogenic	Ketogenic
Lacto-Vegetarian	Lacto-Vegetarian
Ovo-Vegetarian	Ovo-Vegetarian
Vegan	Vegan
Pescetarian	Pescetarian
Paleo	Paleo
Primal	Primal
Whole30	Whole30

Click here to edit entry

**TimeFrame** SAVE

☒ Define synonyms ☐ Regexp entity ☐ Allow automated expansion

☐ Fuzzy matching

Day	Day
Week	Week

Click here to edit entry

### 3.2.3 Contexts

s/n	Intent	Type	Input Context	Output Context
1	welcome	Welcome	-	initial
2	fallback	Fallback	-	-
3	mealplan-start	-	initial	mealplan-start-followup
4	mealplan-getDietTypeYES	Follow-up	mealplan-start-followup	mealplan-getDietType
5	mealplan-getDietTypeNO	Follow-up	mealplan-start-followup	mealplan-getDietType
6	mealplan-getExcludedIngredients	-	mealplan-getDietType	-

s/n	Intent	Type	Input Context	Output Context
7	foodtitbits-start	-	initial	foodtitbits-start-followup
8	foodtitbits-getTrivia	Follow-up	foodtitbits-start-followup	-
9	foodtitbits-getJoke	Follow-up	foodtitbits-start-followup	-
10	foodnutrition	-	initial	-

Table 2 – Intent-Context Mapping

### 3.2.4 Training Data

The screenshot displays the DialogFlow console interface for three intents: **foodtitbits-getTrivia**, **foodtitbits-getJoke**, and **foodnutrition**. Each intent configuration includes a 'Contexts' section with an 'Add input context' field, an 'Add output context' field, and an 'Events' section. Below these is a 'Training phrases' section with a search bar and a list of phrases. For **foodtitbits-getTrivia**, the training phrases are 'I did user expression', 'Trivia', and 'Food Trivia'. For **foodtitbits-getJoke**, the training phrases are 'I did user expression' and 'foodtitbits-start-followup'. For **foodnutrition**, the training phrases are 'I did user expression', 'Nutrition', 'Get Food Nutrition', and 'Get Food Nutrition'.

## 4 References

- [1] DialogFlow Documentation <https://cloud.google.com/dialogflow/docs/>.
- [2] Spoonacular API Documentation <https://spoonacular.com/food-api/docs>.