

P1618: SnapJer Recipe Search || Your Cooking Partner

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Abstract

This poster presents the summary of the proposed application, which is a recipe-searching application with the implementation of 'Snap N Cook' feature, which is an image recognition technology developed by implementing a deep learning technique called **convolutional neural networks**. To make it different from other recipe apps, the 'Snap N Cook' feature can be used to recognize up to **3 ingredients** at a time, and it allows the user to apply **preference filters** to make the search result more focused according to the users' own preferences.

Problem Statement

- Most recipe app still using **text-searching** functionality.
- ‘Snap N Cook’ feature, but for **one ingredient only**.
- No preference filters** make the result search too wide.
- No personal dashboard** functionality.
- People are more attracted to **visual images**.

Objectives

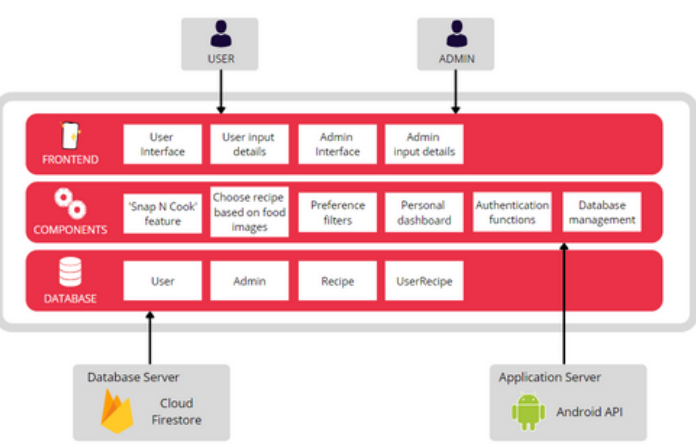
- To create a well-designed user-friendly recipe searching **mobile app**.
- To implement a **deep learning algorithm** to recognize the images of ingredients captured by the app.
- To return recipes based on the **images of ingredients** captured and **filters** applied.
- To return recipes based on the **food image** chosen.

Background Study

- Techniques used to prepare data**
- Data acquisition
 - Image pre-processing
 - Feature extraction
- Convolutional neural networks as the best classification model**
- Achieves the highest accuracy compared to back propagation neural network and SVM classifier
- Transfer learning approach for model training**
- Using VGG-16 architecture
 - Using pre-trained weights from ImageNet
- Datasets to be used for model training**
- Fruits-360 dataset - consists of 131 classes
- Analysis on existing applications**
- Strengths and weaknesses
 - Tasty, SideChef, Yummly, The Photo Cookbook, Recipe Book

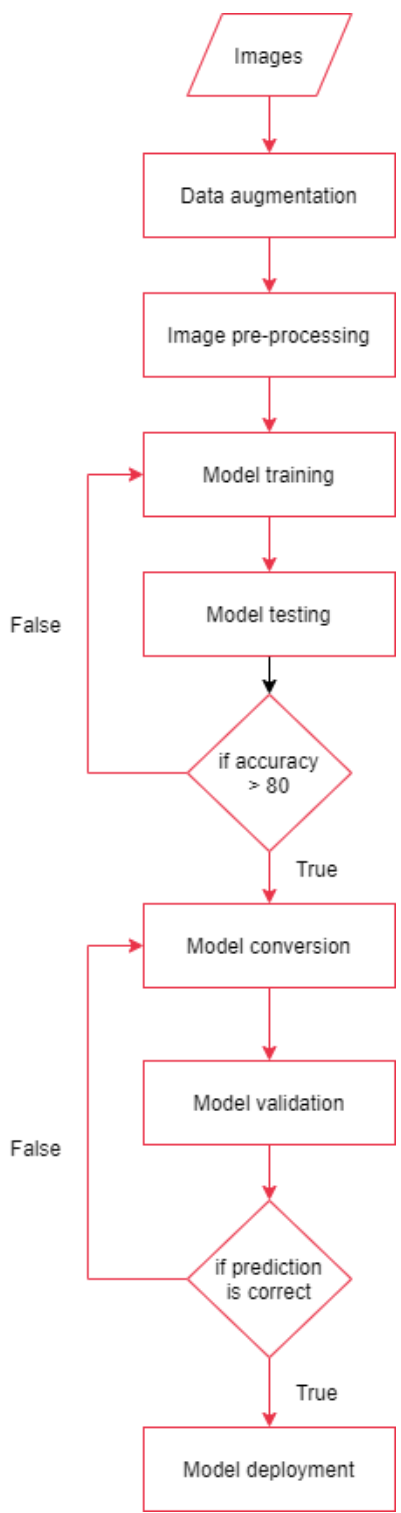
Design

Architecture Diagram



Methodology

Image Recognition Model

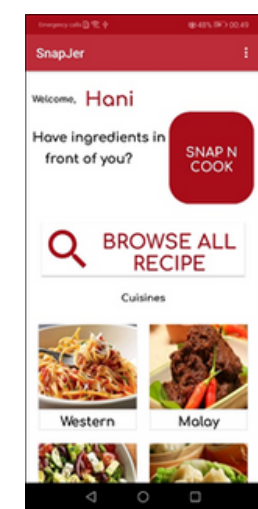


Implementation

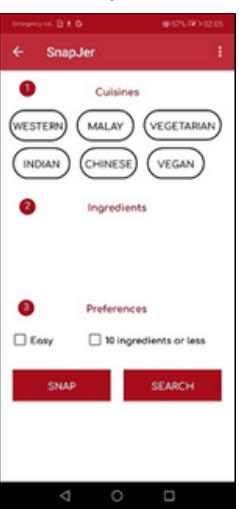
FR1: 'Snap N Cook' feature



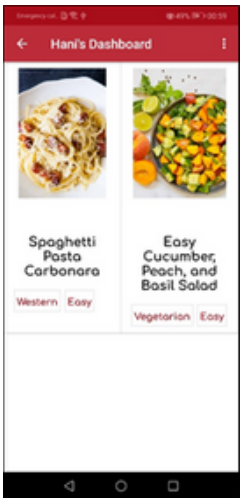
FR2: Choose recipe based on food images



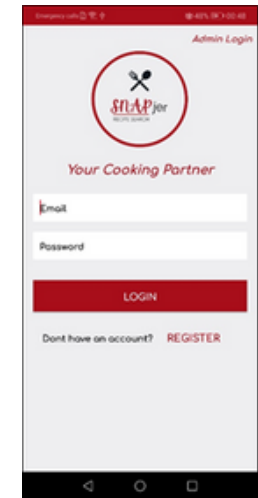
FR3: Apply preference filters before searching for recipe



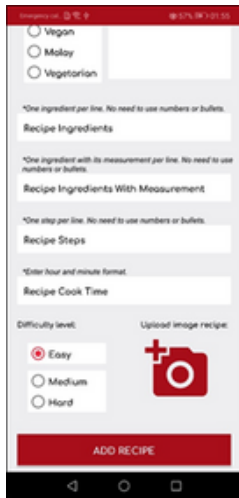
FR4: Save recipes to personal dashboard



FR5: Authentication function



FR6: Database management



Testing

Unit testing

- test specific component
- ensure every component produces the right output
- 11 components in total
- during code development
- all test cases are **passed**

Integration testing

- test integrated components after combining them
- ensure the integrated modules can work perfectly
- bottom-up approach
- after application development has completed
- all test cases are **passed**

System testing

- ensure that the app meets its specified requirement
- test the app according to each functional requirement
- all test cases are **passed**

Conclusion

- **All objectives are fulfilled.**
- **Things learned:**
 - 1) Mobile app development
 - 2) Deep learning technique
- **Enhancement:**
 - 1) ingredient replacement suggestion
 - 2) Remember me function for authentication
 - 3) Make recipe name search not case-sensitive
- **Future plan:**
 - 1) Subscription package