

## PROJECT PROPOSAL

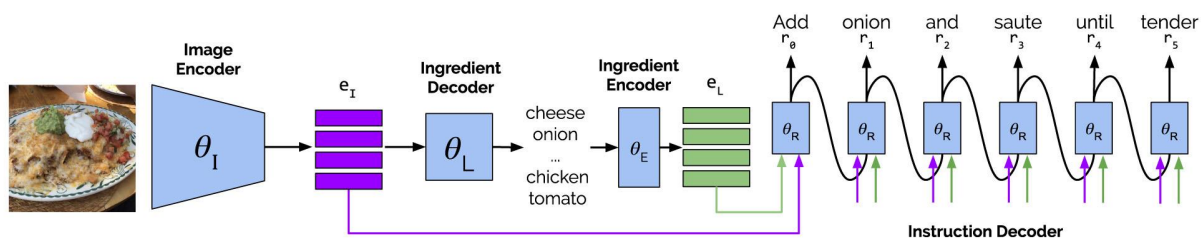
# Food Recommendation System

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## Proposed Plan

Remember eating that dish which made you wonder “Mm! What is this made of?” or “Where is it from?” The motivation behind this project is to recommend foods based on the image of that special dish.

This food recommendation system takes into consideration the cuisine and ingredients of the dish and recommends similar dishes. The basic idea is to implement the Inverse Cooking Algorithm that was developed by Facebook AI Research to predict the ingredients and cooking instructions for the input image.



PCA, t-SNE and Convolution Autoencoders will be analyzed to find the optimal approach for dimensionality reduction on the dataset. Using spectral clustering, the ingredients are categorized into types of dishes (i.e. soups, appetizers, desserts etc) and cuisines (i.e. asian, american, middle-eastern etc).

## Datasets

Food Images and Recipes Datasets:

- Recipe1M: This dataset is the largest open dataset with 887,706 images and recipes.
- Yummly28k: This dataset has 27638 images and recipes.

Cuisines Dataset:

- kaggle\_and\_nature: Contains recipes of multiple cuisines.

## Metrics

To evaluate our recommendation system, we are using the following metrics

- F1 Score for the ingredients
- RMSE
- MAE

## References

- [1] Luis Rita- Building a Food Recommendation System: Machine Learning to prevent and treat cancer through nutrition
- [2] Amaia Salvador, Michal Drozdal, Xavier Giro-i-Nieto, Adriana Romero-Inverse Cooking: Recipe Generation from Food Images
- [3] Amaia Salvador, Nicholas Hynes, Yusuf Aytar, Javier Marin, Ferda Ofli, Ingmar Weber, and Antonio Torralba. 2017. Learning Cross-Modal Embeddings for Cooking Recipes and Food Images.
- [4] Thomas Theodoridis, Vassilios Solachidis, Kosmas Dimitropoulos, Lazaros Gymnopoulos, Petros Daras- A Survey on AI Nutrition Recommender Systems