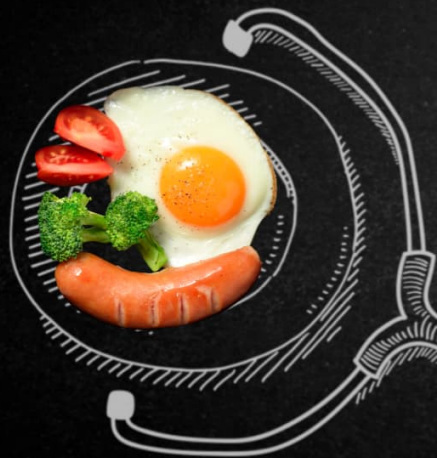


INVERSE COOKING



UPGRADES

RESULTS

MODEL

INTRODUCTION

SNOOP&DOGG
GITANK (11940430)
MADHUR (11940660)



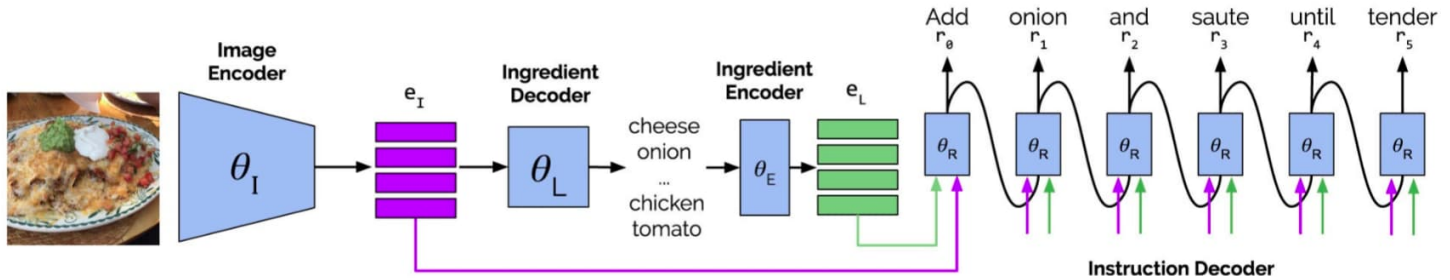
MODEL



- Image to generate ingredients
- Use image and ingredients embeddings to generate recipe

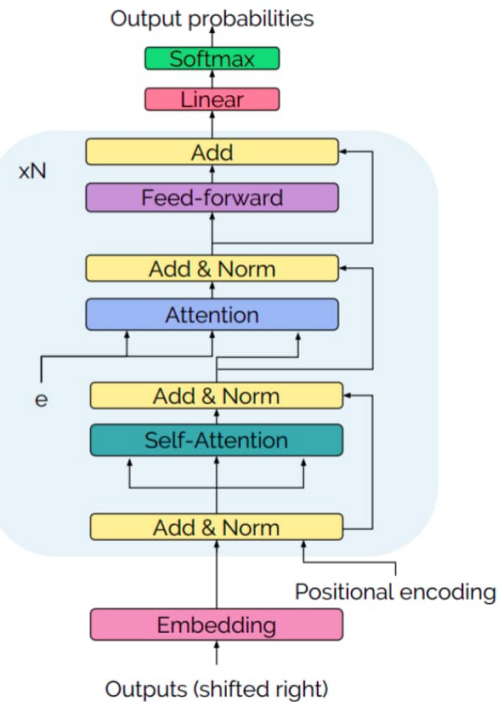
ARCHITECTURE

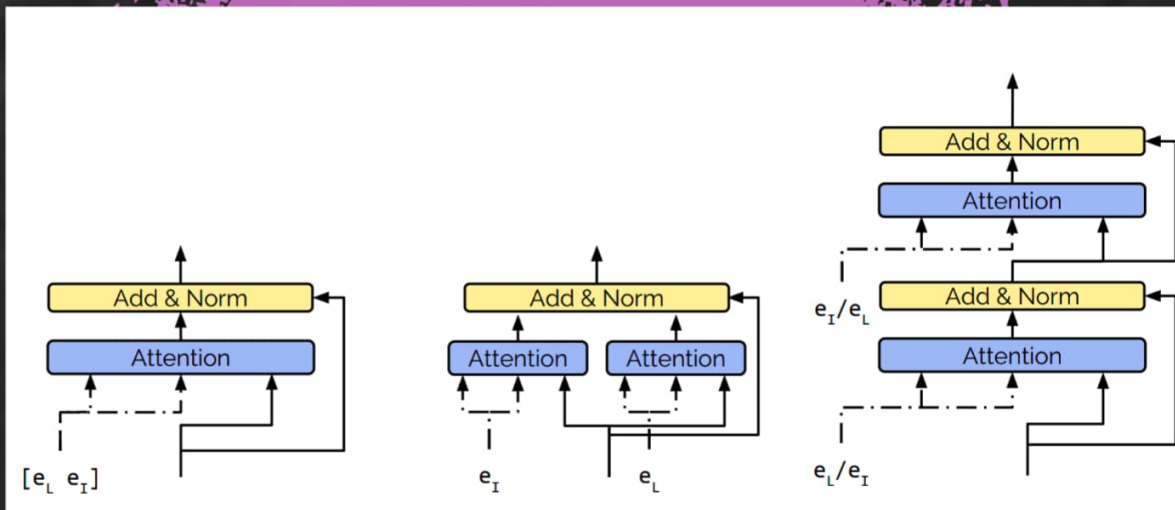
LOSS FUNCTION
AND
OPTIMIZATION



Type of Transformer

A transformer with 16 blocks and 8 multi-head attention, each one with dimensionality of 64, resulting in total dimension of 512.





Loss Functions

For list:

$$\arg \max_{\theta_I, \theta_L} \sum_{i=0}^M \log p(\hat{\mathbf{L}}^{(i)} = \mathbf{L}^{(i)} | \mathbf{x}^{(i)}; \theta_I, \theta_L),$$

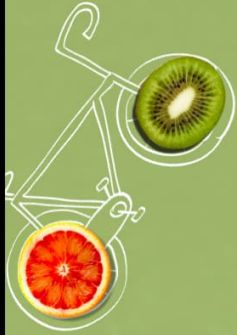
For set:

$$\arg \max_{\theta_I, \theta_L} \sum_{i=0}^M \log p(\hat{\mathbf{s}}^{(i)} = \mathbf{s}^{(i)} | \mathbf{x}^{(i)}; \theta_I, \theta_L).$$



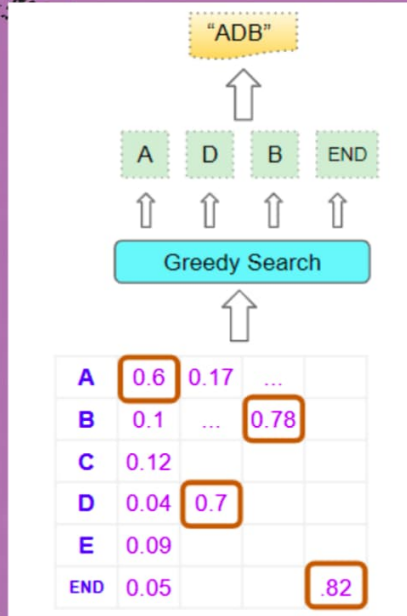
- In the first stage, pre-train the image encoder and ingredients decoder.
- Then, in the second stage, train the ingredient encoder and instruction decoder by minimizing the negative log-likelihood and adjusting θ_R and θ_E .
- We keep a maximum of 20 ingredients per recipe and truncate instructions to a maximum of 150 words. The models are trained with Adam optimizer until early-stopping criteria is met.

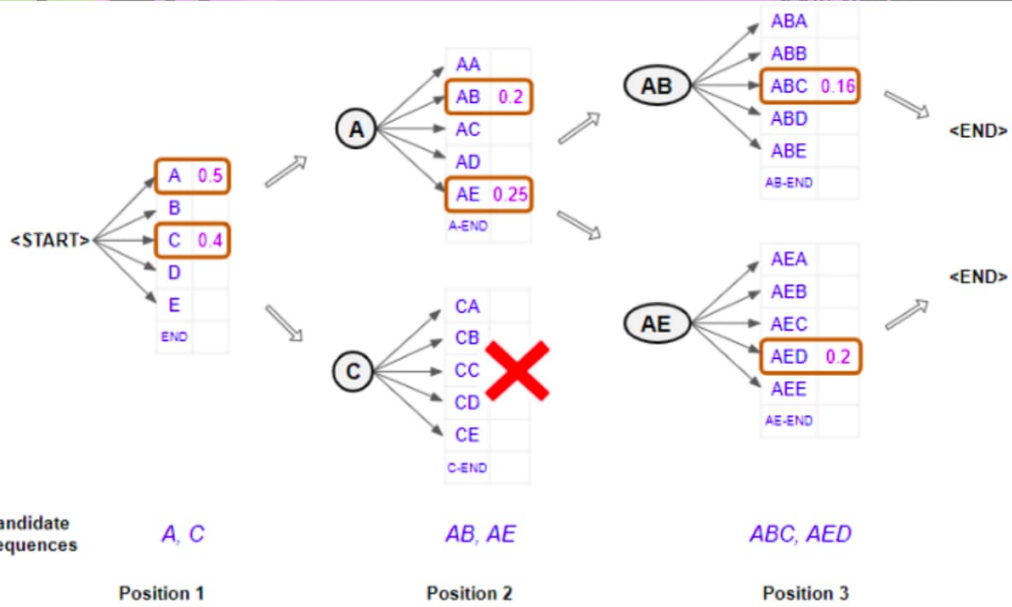
- Given same ingredients, what other recipe can be prepared.
- Which ingredients can be added?
- Which ingredients can be removed.



Greedy
algorithm

Beam Search







RESULTS



After removing some of the ingredients:

Title: Garlic shrimp pasta

Ingredients:

shrimp, pepper, butter, clove, oil, salt, pasta

Instructions:

- Cook pasta according to package directions.
- Drain and set aside.
- In a large skillet, heat oil over medium heat.
- Add garlic and cook for 1 minute.
- Add shrimp and cook for 2 minutes.
- Add butter and cook for 2 minutes.
- Add salt and pepper.
- Toss in pasta and serve.

=====

RECIPE 1

Title: Garlic shrimp scampi

Ingredients:

shrimp, pepper, butter, clove, oil, salt, pasta, parsley

Instructions:

- Heat olive oil in a large skillet over medium heat.
- Cook and stir garlic in hot oil until fragrant, about 1 minute.
- Stir shrimp into garlic; cook and stir until shrimp are pink and opaque, about 3 minutes.
- Season with salt and pepper.
- Stir butter into shrimp mixture until melted and sauce is heated through, about 2 minutes.
- Stir parsley into shrimp mixture; cook and stir until heated through, about 1 minute.

Following ingredients can be added:

cheese
wine

RECIPE 2

Title: Pasta ai carciofi

Ingredients:

shrimp, pepper, butter, clove, oil, salt, pasta, parsley

Instructions:

- Saute garlic in oil, until softened but not browned.
- Add shrimp, saute for 2 min.
- Add pasta sauce, and parsley.
- Toss to coat the pasta.
- Season with salt, pepper, and red pepper flakes.
- Serve warm.

Following ingredients can be added:

cheese
wine

