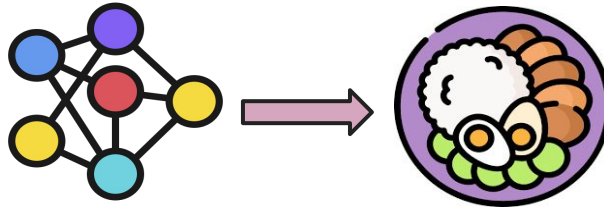


AI-SYNTHETIC DISH



IMAGES



Students:

Marco Cáceres, **RA:** m239281
Rafael Pedrosa, **RA:** r273034
Kevin Inofuente, **RA:** k272316

Professor: Paula Costa

MOTIVATIONS

- In recent years, AI-generative synthetic images has reached such high quality that humans can hardly distinguish them from real pictures. As students, we found very interesting to review current literature and proposed innovations of GANs to achieve such results.
- We selected AI-synthetic dish images as focus of our study. The motivation behind that is to propose a cheaper alternative for food service advertisement.



JUSTIFICATION

- There is a continuous need for advertisement in food service industries.
- Small businesses that offer good services sometimes have trouble reaching clients due to the lack of a good advertisement due to budget limitations.
- Our work will provide alternatives for the right picture and chat-GPT for the right quote for food service advertisement.



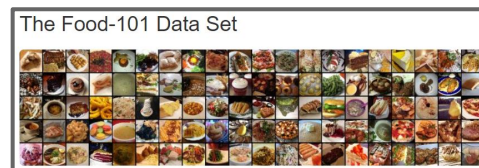
JUSTIFICATION

- There are previous works that shows the efficiency of GANs to generate synthetic food images with high quality, such as:
 - CookGAN
 - StyleGAN
 - cGAN
- We have 3 data sets related to food, specially dishes. We have over 101 categories of food images and a total of 303,271 images.



DATA SETS

- **The food 101** ([link](#), [paper link](#))
 - 101,000 food images in total
 - 101 food categories
 - Each class with 250 manually reviewed test images, and 750 training images.
- **Food 11** ([link](#), [paper link](#))
 - 16,643 food images in total
 - 11 major food categories: Bread, Dairy product, Dessert, Egg, Fried food, Meat, Noodles/Pasta, Rice, Seafood, Soup, and Vegetable/Fruit.
- **ChineseFoodNet** ([link](#), [paper link](#))
 - 185,628 chinese food images in total



RELATED WORKS

- CookGAN
- StyleGAN3
- cGAN



COOKGAN

- It's based on generative deep models.
- Do synthesis of photo-realistic food meal images from textual list of its ingredients.
- CookGAN first builds an attention-based ingredients-image association model, which is then used to condition a generative neural network tasked with synthesizing meal images.



STYLEGAN

- Used the Food-101 dataset for training, which we also intend to use.
- Capable of generating new images taking other images as input.
- Used a general-purpose network to produce realistic images of food.



cGAN

- Trained with recipes and images of Ramen noodles to generate new photorealistic images
- CNN-based image generation on food images.
- Here trained cGAN with a “ramen” image dataset and a recipe image dataset.



EXPECTATIONS

- Our principal expectation is to understand different techniques and components that are involved in GANs for generation of dish images.
- By reviewing related works, we expect to improve these results and to add additional features like transfer style or conditional aspects.
- Finally, we expect this work to be a good and cheaper alternative for food service advertisement.



THANKS!

