Food 101

Michał Mróz, Magdalena Słonińska
(The Beautiful Ducklings)

Idea proposals

- 2 high quality datasets – **Keggle Recipe Ingredients** & **Food101**
- Dish classification based on a photograph/image ⇦
- List ingredients needed for a dish given an image/type

Image recognition

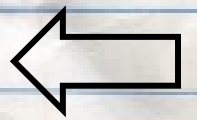
Strategy similar to MNIST classification, but the level of complexity is significantly higher (higher resolution, more categories) - we'll experiment with data batching and image normalization.

gołąbki?

cookies?

Idea proposals

- 2 high quality datasets – **Keggle Recipe Ingredients** & **Food101**
- Dish classification based on a photograph/image
- List ingredients needed for a dish given an image/type



For example...

Pasta, tomatoes, heavy cream

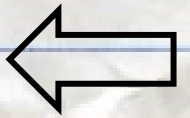
flour, oil, baking soda

Thoughts?

Thank you!

Presentation outline

1. Team info and project TLDR
2. What was the problem and the final research question. Why it matters to you
3. What was the data, what were the techniques
4. What were the results, are you happy with them
5. What were the conclusions, what have you learned, what was good or bad?



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The goal

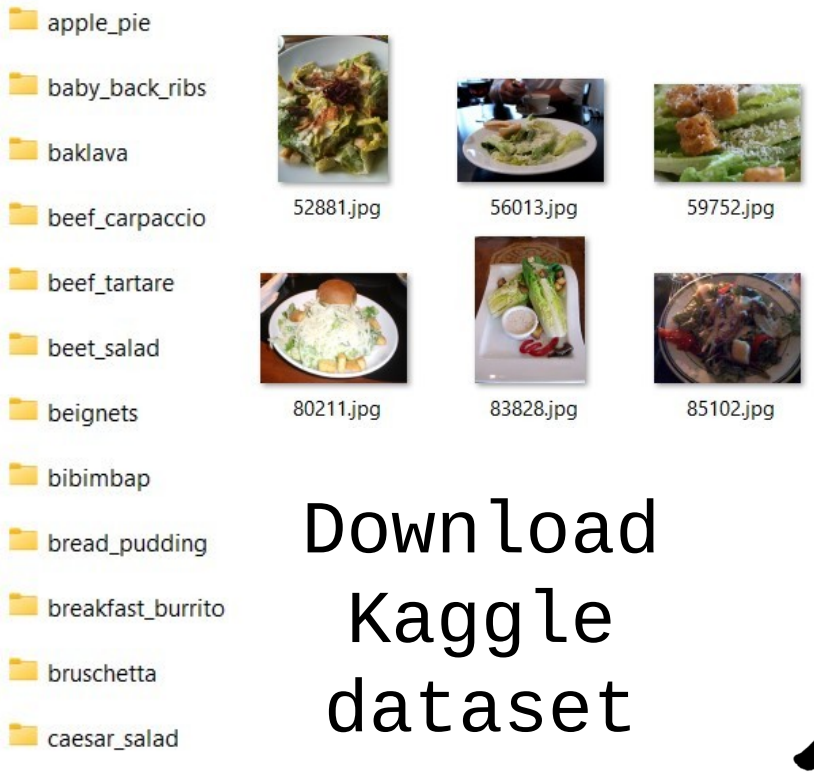
Given an image of some plate of food...

can we tell what kind of dish it is?

gołąbki?

cookies?

Image processing for dummies



Download Kaggle dataset

Create image vector

```
[[[102 171 220]
  [233 233 233]
  [220 220 220]
  [ 68  68  98]
  [154 161 170]
  [227 225 230]
  [125 206 248]
  [195 204 230]
  [135 192 234]
  [ 85 134 176]]

 [[ 46  63 110]
  [107 192 242]
  [168 169 166]
  [ 16  28  52]
  [ 14  19  44]
```

$$dist = \sum_{i=1}^{3 \cdot size^2} |x\_train^{(i)} - x\_test^{(i)}|$$

Define "distance"

Results (accuracy in %)

# of classes	kNN algorithm		Decision trees	
	RGB	greyscale	RGB	greyscale
2	**65,8**	**67,3**	**69,4**	**69,2**
10	**21,3**	**19,2**	**17,8**	**16,1**
50		**5,3**	**4,3**	**3,4**

*all images resized to 48 x 48 pixels

Main issues

1

2

Improvement ideas

1. **Clean up** dataset before using it – remove outliers that are extremely blurry or taken at a weird angle

2. Lots of foods look very similar (colours, presentation etc.) - choose **categories very different** from one another?

3. **Normalize** images so that the dishes are more centered

Thank you!

The Jupyter notebook is available here