

Food Theory

Improve Food Habits

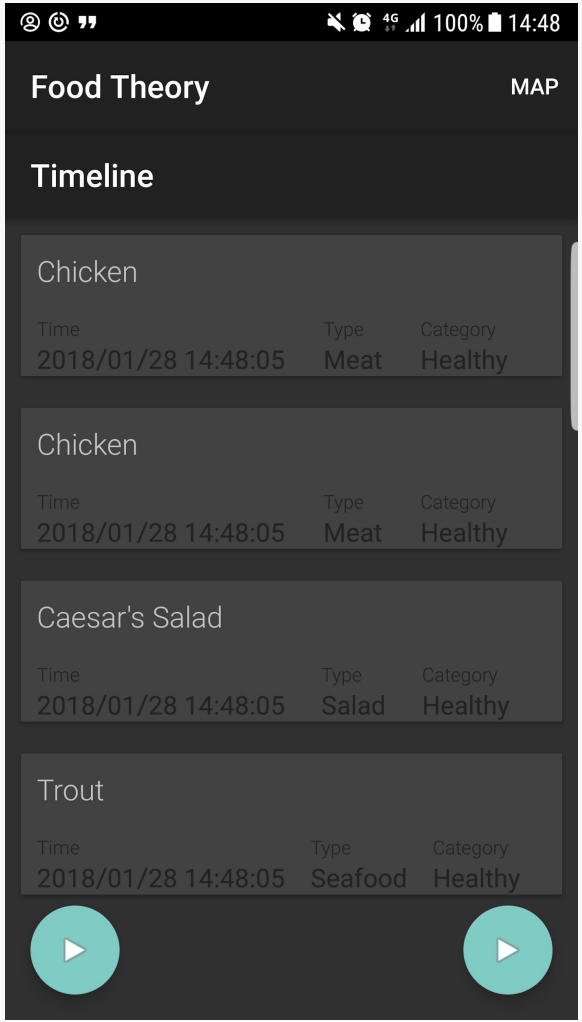
Food Category Recognition

- *Capture an image of food*
- *Deep Convolutional Neural Network classifies it into several categories*
- *Health information derived from food category*

Table 1. MobileNet Body Architecture

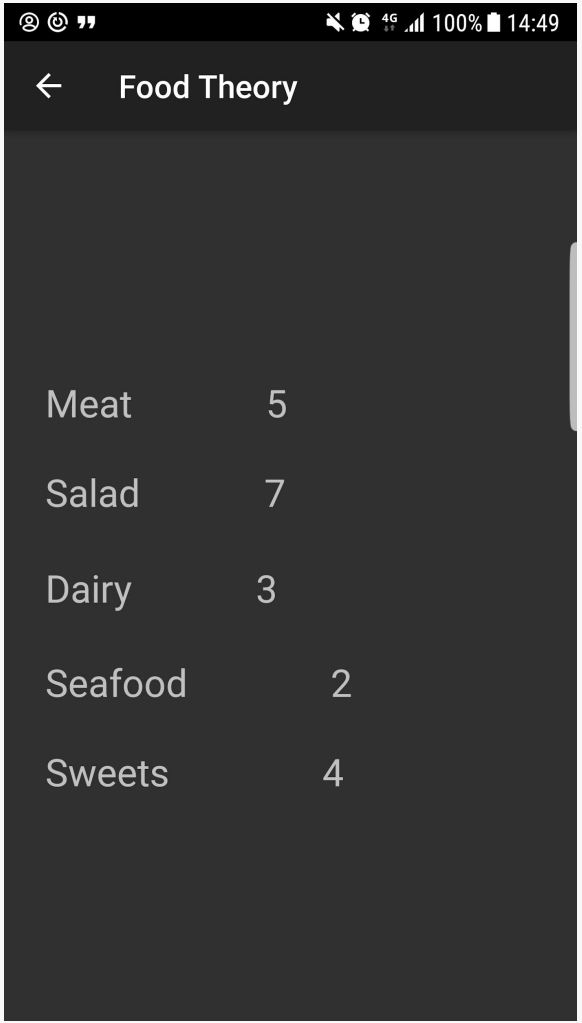
Type / Stride	Filter Shape	Input Size
Conv / s2	$3 \times 3 \times 3 \times 32$	$224 \times 224 \times 3$
Conv dw / s1	$3 \times 3 \times 32$ dw	$112 \times 112 \times 32$
Conv / s1	$1 \times 1 \times 32 \times 64$	$112 \times 112 \times 32$
Conv dw / s2	$3 \times 3 \times 64$ dw	$112 \times 112 \times 64$
Conv / s1	$1 \times 1 \times 64 \times 128$	$56 \times 56 \times 64$
Conv dw / s1	$3 \times 3 \times 128$ dw	$56 \times 56 \times 128$
Conv / s1	$1 \times 1 \times 128 \times 128$	$56 \times 56 \times 128$
Conv dw / s2	$3 \times 3 \times 128$ dw	$56 \times 56 \times 128$
Conv / s1	$1 \times 1 \times 128 \times 256$	$28 \times 28 \times 128$
Conv dw / s1	$3 \times 3 \times 256$ dw	$28 \times 28 \times 256$
Conv / s1	$1 \times 1 \times 256 \times 256$	$28 \times 28 \times 256$
Conv dw / s2	$3 \times 3 \times 256$ dw	$28 \times 28 \times 256$
Conv / s1	$1 \times 1 \times 256 \times 512$	$14 \times 14 \times 256$
$5\times$ Conv dw / s1	$3 \times 3 \times 512$ dw	$14 \times 14 \times 512$
$5\times$ Conv / s1	$1 \times 1 \times 512 \times 512$	$14 \times 14 \times 512$
Conv dw / s2	$3 \times 3 \times 512$ dw	$14 \times 14 \times 512$
Conv / s1	$1 \times 1 \times 512 \times 1024$	$7 \times 7 \times 512$
Conv dw / s2	$3 \times 3 \times 1024$ dw	$7 \times 7 \times 1024$
Conv / s1	$1 \times 1 \times 1024 \times 1024$	$7 \times 7 \times 1024$
Avg Pool / s1	Pool 7×7	$7 \times 7 \times 1024$
FC / s1	1024×1000	$1 \times 1 \times 1024$
Softmax / s1	Classifier	$1 \times 1 \times 1000$

Reference[1]:
MobileNets: Efficient Convolutional Neural Networks for Mobile Vision Applications


100% 14:48
Food Theory
MAP
Timeline
Chicken
Time
2018/01/28 14:48:05
Type
Meat
Category
Healthy
Chicken
Time
2018/01/28 14:48:05
Type
Meat
Category
Healthy
Caesar's Salad
Time
2018/01/28 14:48:05
Type
Salad
Category
Healthy
Trout
Time
2018/01/28 14:48:05
Type
Seafood
Category
Healthy

Open Food Data




100% 14:49
Food Theory
Meat 5
Salad 7
Dairy 3
Seafood 2
Sweets 4

Model	Image size	Weights size	Top-1 accuracy	Top-5 accuracy	Parameters	Depth
Xception	299 x 299	88 MB	0.790	0.945	22,910,480	126
VGG16	224 x 224	528 MB	0.715	0.901	138,357,544	23
VGG19	224 x 224	549 MB	0.727	0.910	143,667,240	26
ResNet50	224 x 224	99 MB	0.759	0.929	25,636,712	168
InceptionV3	299 x 299	92 MB	0.788	0.944	23,851,784	159
Inception ResNetV2	299 x 299	215 MB	**0.804**	**0.953**	55,873,736	572
MobileNet	224 x 224	**17 MB**	0.665	0.871	**4,253,864**	88

Reference[2]:
https://gogul09.github.io/software/flower-recognition-deep-learning