WEEK 3
COUNTING IN DENSE CROWDS USING DEEP LEARNING

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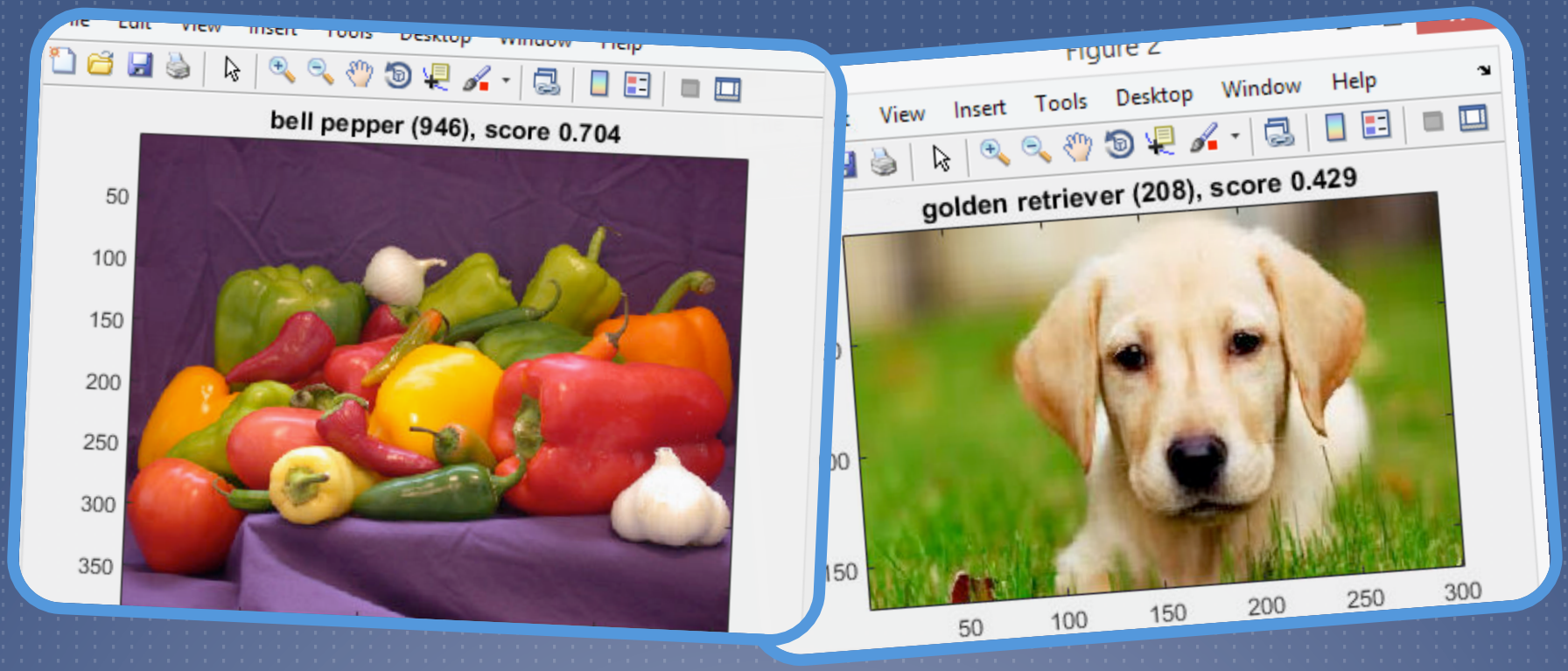
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Partner: Logan Lebanoff

LAST WEEK

- Selected a project
- Discussed research goals
- Reviewed relevant papers
- Obtained Crowd Dataset
- Downloaded & compiled MatConvNet library

CURRENT PROGRESS



WORKING WITH PRE-TRAINED MODELS

- Classified various images using a pre-trained model known as 'ImageNet'
- Obtained top score & label for those images

REVIEWING CODE

Pre-scale the images so each head is 23x23 pixels

Generates & saves patches of all the images

Obtains head detection features, texture features, and sift features(and vocab) respectively

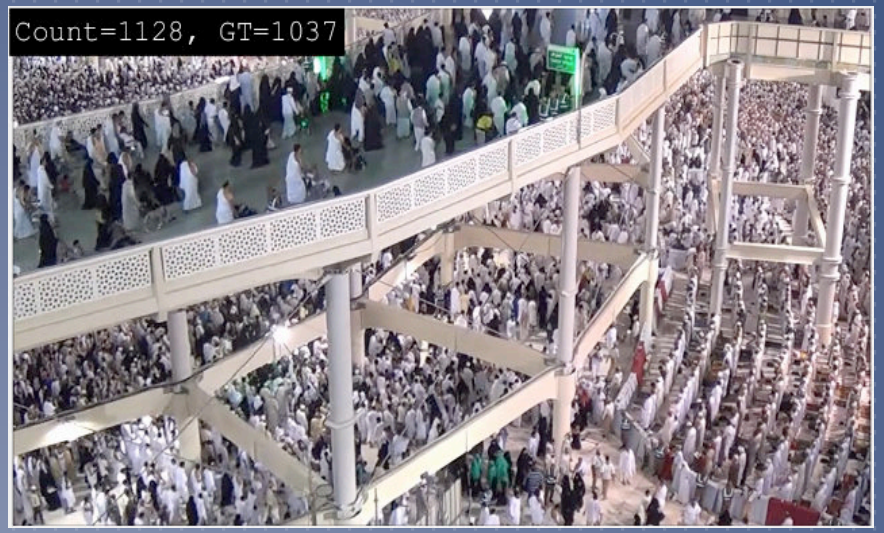
Fuse features into one file and train SVM classifier

```
scriptPreScale
countConfig
structPatch
structHead
featText
getSiftVocab
featSift
genFusionFeatures
trainSVR
```

TRAINING & TESTING

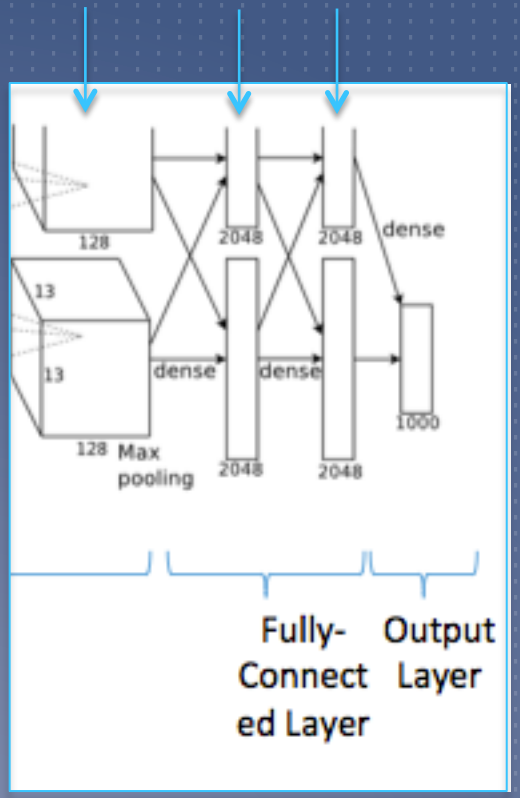
- Ran the code and trained an SVM using head detection, texture, and SIFT features. This was then saved into a file called ‘model.mat’.
- Tested images using the SVM and displayed counts and ground truths.





EXTRACTING FEATURES

- Wrote a script called ‘featureExtractor.m’ which extracts features from all patches.
- Then saves features from the 5th, 6th, and 7th layers of the neural networks into ‘featVec.m’
- Next, we will train an SVM using these features.



featVec.m

Fields	layer5	convfc6	relu6	convfc7	relu7
1	9216x1 single	1x1x4096 si...	1x1x4096 si...	1x1x4096 si...	1x1x4096 si...
2	9216x1 single	1x1x4096 si...	1x1x4096 si...	1x1x4096 si...	1x1x4096 si...
3	9216x1 single	1x1x4096 si...	1x1x4096 si...	1x1x4096 si...	1x1x4096 si...
4	9216x1 single	1x1x4096 si...	1x1x4096 si...	1x1x4096 si...	1x1x4096 si...
5	9216x1 single	1x1x4096 si...	1x1x4096 si...	1x1x4096 si...	1x1x4096 si...
6	9216x1 single	1x1x4096 si...	1x1x4096 si...	1x1x4096 si...	1x1x4096 si...
7	9216x1 single	1x1x4096 si...	1x1x4096 si...	1x1x4096 si...	1x1x4096 si...
8	9216x1 single	1x1x4096 si...	1x1x4096 si...	1x1x4096 si...	1x1x4096 si...
9	9216x1 single	1x1x4096 si...	1x1x4096 si...	1x1x4096 si...	1x1x4096 si...
10	9216x1 single	1x1x4096 si...	1x1x4096 si...	1x1x4096 si...	1x1x4096 si...
11	9216x1 single	1x1x4096 si...	1x1x4096 si...	1x1x4096 si...	1x1x4096 si...
12	9216x1 single	1x1x4096 si...	1x1x4096 si...	1x1x4096 si...	1x1x4096 si...
13	9216x1 single	1x1x4096 si...	1x1x4096 si...	1x1x4096 si...	1x1x4096 si...

Saved the features extracted from running ImageNet on all patches

NEXT STEPS

- Train SVM using extracted features (from relu6 & fc7 layers) from ImageNet
- Start working with Fisher Vectors
- Begin researching and working on videos