Detecting Activities of Daily Living in First-Person Camera Views

CS3710
Yingjie Tang
Experiments On:

• Intel Core i7
• Mac OS X10.10.2
• Matlab R2014_a

Get Instructions from:

• ADLdatasets Instructions:
  http://people.csail.mit.edu/hpirsiav/codes/ADLdataset/README
• Lib SVM Instructions from Chih-Chung:
  http://www.csie.ntu.edu.tw/~cjlin/libsvm/faq.html#/Q9:_MATLAB_interface
Description of Code

• Run action classifier

• Use object models trained on the first 6 videos to classify on other videos

• Present confusion matrix

Description of Dataset

• 20 videos size 43.9GB

• Object annotations, action annotations, detected objects

• Records one frame 1 second!!!
Evaluation Matrix

• Confusion Matrix & Average Precision

Accuracy on 18 action categories
• Our model: 40.6%
• STIP baseline: 22.8%
My Experiments

<table>
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<tr>
<th>object_type</th>
<th>feature_type</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓ active_passive</td>
<td>✓ pyramid</td>
</tr>
<tr>
<td>✓ passive</td>
<td>✓ bag</td>
</tr>
</tbody>
</table>

• 4 Combinations
My Experiments

- **object_type**: active_passive
- **feature_type**: pyramid

• AP = 0.3689
My Experiments

- **object_type**
  - ✓ passive

- **feature_type**
  - ✓ pyramid

- AP = 0.2903
My Experiments

- **object_type**
  - ✓ passive

- **feature_type**
  - ✓ bag

- AP = 0.2666
My Experiments

- object_type
  - ✓ active_passive
- feature_type
  - ✓ bag

- AP = 0.3492
## My Experiments

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Conclusions

- The pyramid does have an improvement using just STIPS
- Active model improves the AP
Modifications to the code

% This make.m is used under Windows

% add -largeArrayDims on 64-bit machines

% changed .obj to .o by @skylinebaby
% modify make.m, add -largeArrayDims on 64-bit machines by @skylinebaby
% according to http://mathforum.org/kb/message.jspa?messageID=9288530

mex -O -largeArrayDims -c svm.cpp
mex -O -largeArrayDims -c svm_model_matlab.c
mex -O -largeArrayDims svmtrain.c svm.o svm_model_matlab.o
mex -O -largeArrayDims svmpredict.c svm.o svm_model_matlab.o
mex -O -largeArrayDims libsvmread.c
mex -O -largeArrayDims libsvmwrite.c