

## ▼ Prep 1: steps to install the packages

```
!pip install py_entitymatching  
!pip install scipy  
!pip install numpy  
!pip install pandas
```



```
Collecting py_entitymatching
  Downloading https://files.pythonhosted.org/packages/ee/d3/2eacdb4ee0e268eb4cf
    |██████████| 2.0MB 2.8MB/s
Collecting PvPrind (from py_entitymatching)

```

## [NEED MODIFICATION: Modify this cell to point to the file location]

### Prep 2: enter the file location on your harddisk

```
Collecting nv_stringmatching==0.2.1 (from nv_entitymatching==0.2.0-nv_entitymatch
import pandas as pd
from google.colab import files
uploaded = files.upload()
```

Choose Files No file chosen

```
Requirement already satisfied: numpy<1.17.0,>=1.16.0 in /usr/local/lib/python2.7/dist-
```

```
table_a = 'cvpr'
table_b = 'arxiv'
candidate_set = 'cand_set'
prediction_set = 'pred_list'
```

```
Building wheels for collected packages: nv-entitymatching, PvPrind, nv-stringmachi
```

### Prep 3: reading the files into pandas dataframe

```
dfa = pd.read_csv(table_a)
dfb = pd.read_csv(table_b)
dfc = pd.read_csv(candidate_set)
dfp = pd.read_csv(prediction_set)
```

```
Installing collected packages: PvPrind, nv-stringmatching, nv-stringmining, nv-
```

### Reducing the size of candidate set

```
Requirement already satisfied: numpy<1.17.0,>=1.16.0 in /usr/local/lib/python2.7/dist-packages

import numpy as np
from IPython.core import debugger
from IPython.display import clear_output
breakpoint = debugger.set_trace
from google.colab import files

pd.set_option('expand_frame_repr', False)
pd.set_option('display.max_colwidth', -1)
!rm L.csv

Ci_filename = "Ci"

densityFlag = 0
```

```

i = 0
Ci = dfc.copy(deep=True)
n_rows = dfc.shape[0]
# L = pd.read_csv("L.csv")
L = pd.DataFrame()
i = L.shape[0]

print(dfc.shape[0])

## Run blocking step
print(Ci.shape[0])
Ci.drop_duplicates(inplace=True)
print(Ci.shape[0])

## Check number of authors
for index, row in Ci.iterrows():
    a_id = row['A_id']
    b_id = row['B_id']

    a_entry = dfa.loc[ dfa['_id'] == a_id ]
    b_entry = dfb.loc[ dfb['_id'] == b_id ]

    a_authors = a_entry['Authors'].str.count(' and ')
    b_authors = b_entry['Authors'].str.count(',')
    a_n_authors = a_authors.values[0] + 1
    b_n_authors = b_authors.values[0] + 1

#    print(a_n_authors)
#    print(b_n_authors)

    if( a_n_authors != b_n_authors ):
        Ci.drop(index, inplace=True)

print(Ci.shape[0])

Ci.to_csv(Ci_filename)

## randomly sample
# np.random.seed(seed=10)
# sample_ids_all = np.arange(0,n_rows)
# np.random.shuffle(sample_ids_all)
# ## ignore first i samples
# sample_ids = sample_ids_all[i:]

# print(sample_ids_all[0:52])
# print(sample_ids[0:52])

B = Ci.copy(deep=True)

B['label'] = pd.Series(np.zeros(B.shape[0]), index = B.index )

for index, row in B.iterrows():
    print("Curr Iteration: {}".format(i))
    a_id = row['A_id']
    b_id = row['B_id']

    a_entry = dfa.loc[ dfa['_id'] == a_id ]
    b_entry = dfb.loc[ dfb['_id'] == b_id ]

    display(a_entry)
    display(b_entry)

    l = raw_input()

    B.loc[index]['label'] = l
#    L.append(B.loc[index])

```

```

if(i % 10 == 0):
    B.to_csv("B.csv")
if(i % 50 == 0):
    files.download("B.csv")

#     break

clear_output()
i = i+1

n_labeled = B.shape[0]
n_pos = B["label"].sum()
n_neg = n_labeled - n_pos

d = float(n_pos) / float(n_labeled)
print("Curr density: {} \n".format(d))

```

↳ Curr density: 0.428211586902

```
B.to_csv("B.csv")
files.download("B.csv")
```

## ▼ Module: debug\_blocker

**Description: debug the blocking rule using the below script to ensure you are not dropping true matches**

**Note: You need to run Prep 1 and 2 in order to run this**

```

# Example input format:
# Format of table_a:
# _id, attribute1, attribute2, ...., attributen

# Format of table_b:
# _id, attribute1, attribute2, ...., attributen

# Format of candidate_set
# A_id,B_id
# where A_id is _id from table_a and B_id is the _id column value from table_b

import py_entitymatching as em
import pandas as pd

def run_debug_blocker(table_a, table_b, table_a_key, table_b_key, candidate_set):
    dfl = em.read_csv_metadata(table_a, key=table_a_key)

```

```
dfr = em.read_csv_metadata(table_b, key=table_b_key)

# reading the candidate set and adding key
dfcand = pd.read_csv(candidate_set)
dfcand.drop_duplicates(inplace=True)
dfcand.to_csv('cand_set_with_index.csv', index_label='id')

dfcset = em.read_csv_metadata('cand_set_with_index.csv', key='id', ltable=dfl,
                             rtable=dfr, fk_ltable='A_id', fk_rtable='B_id')

# running debug blocker to identify the records in A x B \ C
debug_file = em.debug_blocker(dfcset, dfl, dfr)

return debug_file

# debug_file = run_debug_blocker(table_a, table_b, '_id', '_id', candidate_set)
debug_file = run_debug_blocker(table_a, table_b, '_id', '_id', Ci_filename)

# debug_file
for index, row in debug_file.iterrows():
    a_id = row['ltable_Authors']
    b_id = row['rtable_Authors']

    a_authors = a_id.count(' and ')
    b_authors = b_id.count(',')
    a_n_authors = a_authors + 1
    b_n_authors = b_authors + 1
    if (a_n_authors != b_n_authors) :
        print(row)
```



```

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ltable_Tag   Sharma_2018_CVPR
ltable_Title CSGNet: Neural Shape Parser for Constructive Solid Geometr
ltable_Authors Sharma, Gopal and Goyal, Rishabh and Liu, Difan and Kaloge
ltable_Month June
ltable_JournalRef The IEEE Conference on Computer Vision and Pattern Recogni
ltable_Up_System CM
rtable_Tag   arXiv:1712.08290
rtable_Title CSGNet: Neural Shape Parser for Constructive Solid Geometr
rtable_Authors Gopal Sharma, Rishabh Goyal, Difan Liu, Evangelos Kaloger
rtable_Month March
rtable_JournalRef NaN
rtable_Up_System CM
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ltable_Authors Chen, Yu and Tai, Ying and Liu, Xiaoming and Shen, Chunhua
ltable_Month June
ltable_JournalRef The IEEE Conference on Computer Vision and Pattern Recogni
ltable_Up_System CM
rtable_Tag   arXiv:1711.10703
rtable_Title FSRNet: End-to-End Learning Face Super-Resolution with Fac
rtable_Authors Yu Chen, Ying Tai, Xiaoming Liu, Chunhua Shen, Jian Yang
rtable_Month November
rtable_JournalRef NaN
rtable_Up_System CM
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ltable_Title Zero-Shot Visual Recognition Using Semantics-Preserving Ac
ltable_Authors Chen, Long and Zhang, Hanwang and Xiao, Jun and Liu, Wei
ltable_Month June
ltable_JournalRef The IEEE Conference on Computer Vision and Pattern Recogni
ltable_Up_System CM
rtable_Tag   arXiv:1712.01928
rtable_Title Zero-Shot Visual Recognition using Semantics-Preserving Ac
rtable_Authors Long Chen, Hanwang Zhang, Jun Xiao, Wei Liu, Shih-Fu Chang
rtable_Month March
rtable_JournalRef NaN
rtable_Up_System CM
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ltable_Title Single-Shot Refinement Neural Network for Object Detectio
ltable_Authors Zhang, Shifeng and Wen, Longyin and Bian, Xiao and Lei, Z
ltable_Month June
ltable_JournalRef The IEEE Conference on Computer Vision and Pattern Recogni
ltable_Up_System CM

```

estimating\_precision\_recall.ipynb - Colaboratory  
arXiv:1711.06897  
Single-Shot Refinement Neural Network for Object Detection  
Shifeng Zhang, Longyin Wen, Xiao Bian, Zhen Lei, Stan Z. Li

|                        |   |
|------------------------|---|
| rtable_lag             | January   |
| rtable_Title           | Shifeng Zhang, Longyin Wen, Xiao Bian, Zhen Lei, Stan Z. Li               |
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| ltable_Title           | CRRN: Multi-Scale Guided Concurrent Reflection Removal Net                |
| ltable_Authors         | Wan, Renjie and Shi, Boxin and Duan, Ling-Yu and Tan, Ah-Ting             |
| ltable_Month           | June  |
| ltable_JournalRef      | The IEEE Conference on Computer Vision and Pattern Recognition            |
| ltable_Up_System       | CM  |
| rtable_Tag             | arXiv:1805.11802  |
| rtable_Title           | CRRN: Multi-Scale Guided Concurrent Reflection Removal Net                |
| rtable_Authors         | Renjie Wan, Boxin Shi, Ling-Yu Duan, Ah-Hwee Tan, Alex C. Tsoi            |
| rtable_Month           | May   |
| rtable_JournalRef      | NaN   |
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| ltable_Title           | Revisiting Oxford and Paris: Large-Scale Image Retrieval Efficiently      |
| ltable_Authors         | Radenovi, Filip and Iscen, Ahmet and Tolias, Giorgos and Avrithis, Yannis |
| ltable_Month           | June  |
| ltable_JournalRef      | The IEEE Conference on Computer Vision and Pattern Recognition            |
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| rtable_Month           | March   |
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| ltable_Title           | Real-Time Rotation-Invariant Face Detection With Progression              |
| ltable_Authors         | Shi, Xuepeng and Shan, Shiguang and Kan, Meina and Wu, Shuzhe             |
| ltable_Month           | June  |
| ltable_JournalRef      | The IEEE Conference on Computer Vision and Pattern Recognition            |
| ltable_Up_System       | CM  |
| rtable_Tag             | arXiv:1804.06039  |
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| rtable_Authors         | Xuepeng Shi, Shiguang Shan, Meina Kan, Shuzhe Wu, Xilin Chen              |
| rtable_Month           | April   |
| rtable_JournalRef      | NaN   |
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| ltable_Title           | Structure From Recurrent Motion: From Rigidity to Recurrer            |
| ltable_Authors         | Li, Xiu and Li, Hongdong and Joo, Hanbyul and Liu, Yebin et al.       |
| ltable_Month           | June  |
| ltable_JournalRef      | The IEEE Conference on Computer Vision and Pattern Recognition        |
| ltable_Up_System       | CM  |
| rtable_Tag             | arXiv:1804.06510  |
| rtable_Title           | Structure from Recurrent Motion: From Rigidity to Recurrer            |
| rtable_Authors         | Xiu Li, Hongdong Li, Hanbyul Joo, Yebin Liu, Yaser Sheikh             |
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| rtable_JournalRef      | NaN   |
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| ltable_Title           | End-to-End Dense Video Captioning With Masked Transformer             |
| ltable_Authors         | Zhou, Luowei and Zhou, Yingbo and Corso, Jason J. and Socher, Richard |
| ltable_Month           | June  |
| ltable_JournalRef      | The IEEE Conference on Computer Vision and Pattern Recognition        |
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| rtable_Authors         | Luowei Zhou, Yingbo Zhou, Jason J. Corso, Richard Socher, et al.      |
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| ltable_Title           | Weakly Supervised Instance Segmentation Using Class Peak Feature      |
| ltable_Authors         | Zhou, Yanzhao and Zhu, Yi and Ye, Qixiang and Qiu, Qiang et al.       |
| ltable_Month           | June  |
| ltable_JournalRef      | The IEEE Conference on Computer Vision and Pattern Recognition        |
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| rtable_Authors         | Yanzhao Zhou, Yi Zhu, Qixiang Ye, Qiang Qiu, Jianbin Jiao et al.      |
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| ltable_Title           | Single-Shot Object Detection With Enriched Semantics                  |
| ltable_Authors         | Zhang, Zhishuai and Qiao, Siyuan and Xie, Cihang and Shen, Bo et al.  |
| ltable_Month           | June  |
| ltable_JournalRef      | The IEEE Conference on Computer Vision and Pattern Recognition        |
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| rtable_Title           | Single-Shot Object Detection with Enriched Semantics                  |
| rtable_Authors         | Zhishuai Zhang, Siyuan Qiao, Cihang Xie, Wei Shen, Bo Wang et al.     |
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ltable_Authors     Yu, Jiahui and Lin, Zhe and Yang, Jimei and Shen, Xiaohui
ltable_Month       June
ltable_JournalRef The IEEE Conference on Computer Vision and Pattern Recogni
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rtable_Authors     Jiahui Yu, Zhe Lin, Jimei Yang, Xiaohui Shen, Xin Lu, Thom
rtable_Month       March
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ltable_Title       Occlusion Aware Unsupervised Learning of Optical Flow
ltable_Authors     Wang, Yang and Yang, Yi and Yang, Zhenheng and Zhao, Liang
ltable_Month       June
ltable_JournalRef The IEEE Conference on Computer Vision and Pattern Recogni
ltable_Up_System   CM
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rtable_Up_System   CM
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ltable_Title       Repulsion Loss: Detecting Pedestrians in a Crowd
ltable_Authors     Wang, Xinlong and Xiao, Tete and Jiang, Yuning and Shao, S
ltable_Month       June
ltable_JournalRef The IEEE Conference on Computer Vision and Pattern Recogni
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ltable_Title       Cascaded Pyramid Network for Multi-Person Pose Estimation
ltable_Authors     Chen, Yilun and Wang, Zhicheng and Peng, Yuxiang and Zhang

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ltable_Month          June
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ltable_Authors        Han, Wei and Chang, Shiyu and Liu, Ding and Yu, Mo and Wit
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ltable_JournalRef    The IEEE Conference on Computer Vision and Pattern Recogni
ltable_Up_System      CM
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rtable_Month          May
rtable_JournalRef    NaN
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ltable_Month          June
ltable_JournalRef    The IEEE Conference on Computer Vision and Pattern Recogni
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rtable_Tag            arXiv:1804.03487
rtable_Title          Exploring Disentangled Feature Representation Beyond Face
rtable_Authors        Yu Liu, Fangyin Wei, Jing Shao, Lu Sheng, Junjie Yan, Xiaoc
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ltable_Title          Self-Supervised Adversarial Hashing Networks for Cross-Mo
ltable_Authors        Li, Chao and Deng, Cheng and Li, Ning and Liu, Wei and Gao
ltable_Month          June
ltable_JournalRef    The IEEE Conference on Computer Vision and Pattern Recogni
ltable_Up_System      CM
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rtable_Title          Self-Supervised Adversarial Hashing Networks for Cross-Mo
rtable_Authors        Chao Li, Cheng Deng, Ning Li, Wei Liu, Xinbo Gao, Dacheng
rtable_Month          April
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```

```

      . . .
      . . .

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ltable_Title LDMNet: Low Dimensional Manifold Regularized Neural Network
ltable_Authors Zhu, Wei and Qiu, Qiang and Huang, Jiaji and Calderbank, F
ltable_Month June
ltable_JournalRef The IEEE Conference on Computer Vision and Pattern Recognition
ltable_Up_System CM
rtable_Tag   arXiv:1711.06246
rtable_Title LDMNet: Low Dimensional Manifold Regularized Neural Network
rtable_Authors Wei Zhu, Qiang Qiu, Jiaji Huang, Robert Calderbank, Guillermo
rtable_Month November
rtable_JournalRef NaN
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ltable_Title Burst Denoising With Kernel Prediction Networks
ltable_Authors Mildenhall, Ben and Barron, Jonathan T. and Chen, Jiawen and
ltable_Month June
ltable_JournalRef The IEEE Conference on Computer Vision and Pattern Recognition
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rtable_Tag   arXiv:1712.02327
rtable_Title Burst Denoising with Kernel Prediction Networks
rtable_Authors Ben Mildenhall, Jonathan T. Barron, Jiawen Chen, Dillon Strudler
rtable_Month March
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ltable_Title IQA: Visual Question Answering in Interactive Environments
ltable_Authors Gordon, Daniel and Kembhavi, Aniruddha and Rastegari, Mohammad
ltable_Month June
ltable_JournalRef The IEEE Conference on Computer Vision and Pattern Recognition
ltable_Up_System CM
rtable_Tag   arXiv:1712.03316
rtable_Title IQA: Visual Question Answering in Interactive Environments
rtable_Authors Daniel Gordon, Aniruddha Kembhavi, Mohammad Rastegari, Jos
rtable_Month September
rtable_JournalRef NaN
rtable_Up_System CM
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ltable_Title What Do Deep Networks Like to See?
ltable_Authors Palacio, Sebastian and Folz, Joachim and Hees, Jörn and Rätsch, Gunnar
ltable_Month June
ltable_JournalRef The IEEE Conference on Computer Vision and Pattern Recognition
ltable_Up_System CM
rtable_Tag   arXiv:1802.09327

```

```

estimating_precision_recall.ipynb - Colaboratory
What do Deep Networks Like to See?
Sebastian Palacio, Joachim Folz, Jrn Hees, Federico Raue,
March
NaN
CM
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ltable_Title OL: Orthogonal Low-Rank Embedding - A Plug and Play Geomet
ltable_Authors Lezama, Jos and Qiu, Qiang and Mus, Pablo and Sapiro, Guil
ltable_Month June
ltable_JournalRef The IEEE Conference on Computer Vision and Pattern Recogni
ltable_Up_System CM
rtable_Tag arXiv:1712.01727
rtable_Title OL: Orthogonal Low-rank Embedding, A Plug and Play Geometr
rtable_Authors Jos Lezama, Qiang Qiu, Pablo Mus, Guillermo Sapiro
rtable_Month December
rtable_JournalRef NaN
rtable_Up_System CM
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ltable_Title Multi-Scale Continuous CRFs as Sequential Deep Networks fo
ltable_Authors Xu, Dan and Ricci, Elisa and Ouyang, Wanli and Wang, Xiaog
ltable_Month July
ltable_JournalRef The IEEE Conference on Computer Vision and Pattern Recogni
ltable_Up_System CM
rtable_Tag arXiv:1803.00891
rtable_Title Monocular Depth Estimation using Multi-Scale Continuous CF
rtable_Authors Dan Xu, Elisa Ricci, Wanli Ouyang, Xiaogang Wang, Nicu Se
rtable_Month March
rtable_JournalRef NaN
rtable_Up_System CM
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ltable_Title PointNetVLAD: Deep Point Cloud Based Retrieval for Large-S
ltable_Authors Angelina Uy, Mikaela and Hee Lee, Gim
ltable_Month June
ltable_JournalRef The IEEE Conference on Computer Vision and Pattern Recogni
ltable_Up_System CM
rtable_Tag arXiv:1804.03492
rtable_Title PointNetVLAD: Deep Point Cloud Based Retrieval for Large-S
rtable_Authors Mikaela Angelina Uy, Gim Hee Lee
rtable_Month May
rtable_JournalRef NaN
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```

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ltable_Tag           Wang_2018_CVPR
ltable_Title         Iterative Learning With Open-Set Noisy Labels
ltable_Authors       Wang, Yisen and Liu, Weiyang and Ma, Xingjun and Bailey, James
ltable_Month          June
ltable_JournalRef    The IEEE Conference on Computer Vision and Pattern Recognition
ltable_Up_System      CM
rtable_Tag            arXiv:1804.00092
rtable_Title          Iterative Learning with Open-set Noisy Labels
rtable_Authors        Yisen Wang, Weiyang Liu, Xingjun Ma, James Bailey, Hongyu
rtable_Month          March
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ltable_Title          ScanComplete: Large-Scale Scene Completion and Semantic Segmentation
ltable_Authors        Dai, Angela and Ritchie, Daniel and Bokeloh, Martin and Reed, Scott
ltable_Month          June
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rtable_Tag            arXiv:1712.10215
rtable_Title          ScanComplete: Large-Scale Scene Completion and Semantic Segmentation
rtable_Authors        Angela Dai, Daniel Ritchie, Martin Bokeloh, Scott Reed, Jr.
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ltable_Authors        Chen, Ying-Cong and Lin, Huaijia and Shu, Michelle and Li, Xin
ltable_Month          June
ltable_JournalRef    The IEEE Conference on Computer Vision and Pattern Recognition
ltable_Up_System      CM
rtable_Tag            arXiv:1803.05576
rtable_Title          Facelet-Bank for Fast Portrait Manipulation
rtable_Authors        Ying-Cong Chen, Huaijia Lin, Michelle Shu, Ruiyu Li, Xin Li
rtable_Month          March
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ltable_Authors        Deng, Haowen and Birdal, Tolga and Ilic, Slobodan
ltable_Month          June
ltable_JournalRef    The IEEE Conference on Computer Vision and Pattern Recognition
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rtable_Tag            arXiv:1802.02669
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rtable_Authors        Haowen Deng, Tolga Birdal, Slobodan Ilic
rtable_Month          March

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ltable_Authors        Li, Yuhong and Zhang, Xiaofan and Chen, Deming
ltable_Month          June
ltable_JournalRef    The IEEE Conference on Computer Vision and Pattern Recogni
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rtable_Title          CSRNet: Dilated Convolutional Neural Networks for Understa
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rtable_Month          April
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ltable_Authors        Jin, Meiguang and Meishvili, Givi and Favaro, Paolo
ltable_Month          June
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ltable_Authors        Luvizon, Diogo C. and Picard, David and Tabia, Hedi
ltable_Month          June
ltable_JournalRef    The IEEE Conference on Computer Vision and Pattern Recogni
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rtable_Tag            arXiv:1802.09232
rtable_Title          2D/3D Pose Estimation and Action Recognition using Multitac
rtable_Authors        Diogo C. Luvizon, David Picard, Hedi Tabia
rtable_Month          March
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ltable_Title          Object Referring in Videos With Language and Human Gaze
ltable_Authors        Balajee Vasudevan, Arun and Dai, Dengxin and Van Gool, Luc
ltable_Month          June
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rtable_Authors     Arun Balajee Vasudevan, Dengxin Dai, Luc Van Gool
rtable_Month       April
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ltable_Authors     Chen, Yuhua and Li, Wen and Van Gool, Luc
ltable_Month       June
ltable_JournalRef The IEEE Conference on Computer Vision and Pattern Recognition
ltable_Up_System   CM
rtable_Tag         arXiv:1711.11556
rtable_Title       ROAD: Reality Oriented Adaptation for Semantic Segmentation
rtable_Authors     Yuhua Chen, Wen Li, Luc Van Gool
rtable_Month       April
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Name: 34, dtype: object
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ltable_Title       xUnit: Learning a Spatial Activation Function for Efficient
ltable_Authors     Kligvasser, Idan and Rott Shaham, Tamar and Michaeli, Tomer
ltable_Month       June
ltable_JournalRef The IEEE Conference on Computer Vision and Pattern Recognition
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rtable_Tag         arXiv:1711.06445
rtable_Title       xUnit: Learning a Spatial Activation Function for Efficient
rtable_Authors     Idan Kligvasser, Tamar Rott Shaham, Tomer Michaeli
rtable_Month       March
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Name: 35, dtype: object
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ltable_Authors     Hui, Tak-Wai and Tang, Xiaoou and Change Loy, Chen
ltable_Month       June
ltable_JournalRef The IEEE Conference on Computer Vision and Pattern Recognition
ltable_Up_System   CM
rtable_Tag         arXiv:1805.07036
rtable_Title       LiteFlowNet: A Lightweight Convolutional Neural Network for
rtable_Authors     Tak-Wai Hui, Xiaoou Tang, Chen Change Loy
rtable_Month       May
rtable_JournalRef NaN
rtable_Up_System   CM
Name: 36, dtype: object

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| <u>ltable_Authors</u>    | Customized Image Narrative Generation via Interactive Visu |
| <u>ltable_Month</u>      | Shin, Andrew and Ushiku, Yoshitaka and Harada, Tatsuya     |
| <u>ltable_JournalRef</u> | June   |
| <u>ltable_Up_System</u>  | The IEEE Conference on Computer Vision and Pattern Recogni |
| <u>rtable_Tag</u>        | CM   |
| <u>rtable_Title</u>      | arXiv:1805.00460   |
| <u>rtable_Authors</u>    | Customized Image Narrative Generation via Interactive Visu |
| <u>rtable_Month</u>      | Andrew Shin, Yoshitaka Ushiku, Tatsuya Harada              |
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| <u>ltable_Authors</u>    | Zhang, Ziming and Wu, Yuanwei and Wang, Guanghui           |
| <u>ltable_Month</u>      | June   |
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| <u>rtable_Title</u>      | BPGrad: Towards Global Optimality in Deep Learning via Br  |
| <u>rtable_Authors</u>    | Ziming Zhang, Yuanwei Wu, Guanghui Wang                    |
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| <u>ltable_Title</u>      | Unsupervised Textual Grounding: Linking Words to Image Cor |
| <u>ltable_Authors</u>    | Yeh, Raymond A. and Do, Minh N. and Schwing, Alexander G.  |
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| <u>ltable_JournalRef</u> | The IEEE Conference on Computer Vision and Pattern Recogni |
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| <u>rtable_Authors</u>    | Raymond A. Yeh, Minh N. Do, Alexander G. Schwing           |
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| <u>ltable_Title</u>      | Link and Code: Fast Indexing With Graphs and Compact Regre |
| <u>ltable_Authors</u>    | Douze, Matthijs and Sablayrolles, Alexandre and Jgou, Herv |
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| <u>ltable_JournalRef</u> | The IEEE Conference on Computer Vision and Pattern Recogni |
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rtable_Title          Link and code: Fast indexing with graphs and compact regre
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ltable_Authors        Wu, Yue and Gou, Chao and Ji, Qiang
ltable_Month          July
ltable_JournalRef    The IEEE Conference on Computer Vision and Pattern Recogni
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rtable_Tag            arXiv:1709.08130
rtable_Title          Simultaneous Facial Landmark Detection, Pose and Deformati
rtable_Authors        Yue Wu, Chao Gou, Qiang Ji
rtable_Month          September
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Name: 41, dtype: object
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ltable_Authors        Hold-Geoffroy, Yannick and Sunkavalli, Kalyan and Eisenmar
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ltable_JournalRef    The IEEE Conference on Computer Vision and Pattern Recogni
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ltable_Authors        Suzuki, Tomoyuki and Kataoka, Hirokatsu and Aoki, Yoshimitsu
ltable_Month          June
ltable_JournalRef    The IEEE Conference on Computer Vision and Pattern Recogni
ltable_Up_System      CM
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rtable_Title          Anticipating Traffic Accidents with Adaptive Loss and Larg
rtable_Authors        Tomoyuki Suzuki, Hirokatsu Kataoka, Yoshimitsu Aoki, Yutaka
rtable_Month          April
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Logo Synthesis and Manipulation With Clustered Generative  
Sage, Alexander and Agustsson, Eirikur and Timofte, Radu et al.  
June  
The IEEE Conference on Computer Vision and Pattern Recognition  
arXiv:1712.04407  
Logo Synthesis and Manipulation with Clustered Generative  
Alexander Sage, Eirikur Agustsson, Radu Timofte, Luc Van Gool  
December  
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Name: 46, dtype: object  
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ltable\_Authors Veit, Andreas and Nickel, Maximilian and Belongie, Serge et al.  
ltable\_Month June  
ltable\_JournalRef The IEEE Conference on Computer Vision and Pattern Recognition  
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rtable\_Title Separating Self-Expression and Visual Content in Hashtag Selection  
rtable\_Authors Andreas Veit, Maximilian Nickel, Serge Belongie, Laurens van Gool  
rtable\_Month November  
rtable\_JournalRef NaN  
rtable\_Up\_System CM  
Name: 47, dtype: object  
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ltable\_Authors Gavrilyuk, Kirill and Ghodrati, Amir and Li, Zhenyang and  
ltable\_Month June  
ltable\_JournalRef The IEEE Conference on Computer Vision and Pattern Recognition  
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rtable\_Title Actor and Action Video Segmentation from a Sentence  
rtable\_Authors Kirill Gavrilyuk, Amir Ghodrati, Zhenyang Li, Cees G. M. Snoek  
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ltable\_Authors Maninis, Kevis-Kokitsi and Caelles, Sergi and Pont-Tuset,  
ltable\_Month June  
ltable\_JournalRef The IEEE Conference on Computer Vision and Pattern Recognition  
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rtable\_Title Deep Extreme Cut: From Extreme Points to Object Segmentation  
rtable\_Authors Kevis-Kokitsi Maninis, Sergi Caelles, Jordi Pont-Tuset, Luis  
rtable\_Month March

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ltable_Authors         He, Lingxiao and Liang, Jian and Li, Haiqing and Sun, Zher
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ltable_JournalRef      The IEEE Conference on Computer Vision and Pattern Recogni
ltable_Up_System        CM
rtable_Tag              arXiv:1801.00881
rtable_Title            Deep Spatial Feature Reconstruction for Partial Person Re-
rtable_Authors          Lingxiao He, Jian Liang, Haiqing Li, Zhenan Sun
rtable_Month             September
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ltable_Authors          Lv, Jianming and Chen, Weihang and Li, Qing and Yang, Can
ltable_Month            June
ltable_JournalRef      The IEEE Conference on Computer Vision and Pattern Recogni
ltable_Up_System        CM
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rtable_Authors          Jianming Lv, Weihang Chen, Qing Li, Can Yang
rtable_Month             March
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Name: 51, dtype: object
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ltable_Authors          Li, Chen and Zhang, Zhen and Sun Lee, Wee and Hee Lee, Gim
ltable_Month            June
ltable_JournalRef      The IEEE Conference on Computer Vision and Pattern Recogni
ltable_Up_System        CM
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ltable_Authors          Chen, Yuhua and Pont-Tuset, Jordi and Montes, Alberto and
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ltable_JournalRef      The IEEE Conference on Computer Vision and Pattern Recognition
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rtable_Authors         Yuhua Chen, Jordi Pont-Tuset, Alberto Montes, Luc Van Gool
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Name: 53, dtype: object
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ltable_Authors         Senocak, Arda and Oh, Tae-Hyun and Kim, Junsik and Yang, Ming-Hsuan
ltable_Month           June
ltable_JournalRef     The IEEE Conference on Computer Vision and Pattern Recognition
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rtable_Tag             arXiv:1803.03849
rtable_Title           Learning to Localize Sound Source in Visual Scenes
rtable_Authors         Arda Senocak, Tae-Hyun Oh, Junsik Kim, Ming-Hsuan Yang, Irvin
rtable_Month           March
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ltable_Authors         Zhang, Jing and Zhang, Tong and Dai, Yuchao and Harandi, Mehrtash
ltable_Month           June
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rtable_Authors         Jing Zhang, Tong Zhang, Yuchao Dai, Mehrtash Harandi, Richard
rtable_Month           March
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Name: 55, dtype: object
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ltable_Authors         Gao, Ruiqi and Lu, Yang and Zhou, Junpei and Zhu, Song-Chun
ltable_Month           June
ltable_JournalRef     The IEEE Conference on Computer Vision and Pattern Recognition
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rtable_Authors         Ruiqi Gao, Yang Lu, Junpei Zhou, Song-Chun Zhu, Ying Nian Wu
rtable_Month           April
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ltable_Authors Li, Yehao and Yao, Ting and Pan, Yingwei and Chao, Hongyar
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ltable_JournalRef The IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2018
ltable_Up_System CM
rtable_Tag arXiv:1804.08274
rtable_Title Jointly Localizing and Describing Events for Dense Video (CVPR 2018)
rtable_Authors Yehao Li, Ting Yao, Yingwei Pan, Hongyang Chao, Tao Mei
rtable_Month April
rtable_JournalRef NaN
rtable_Up_System CM
Name: 58, dtype: object
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ltable_Title View Extrapolation of Human Body From a Single Image
ltable_Authors Zhu, Hao and Su, Hao and Wang, Peng and Cao, Xun and Yang,
ltable_Month June
ltable_JournalRef The IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2018
ltable_Up_System CM
rtable_Tag arXiv:1804.04213
rtable_Title View Extrapolation of Human Body from a Single Image
rtable_Authors Hao Zhu, Hao Su, Peng Wang, Xun Cao, Ruigang Yang
rtable_Month April
rtable_JournalRef NaN
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ltable_Title PlaneNet: Piece-Wise Planar Reconstruction From a Single Image
ltable_Authors Liu, Chen and Yang, Jimei and Ceylan, Duygu and Yumer, Ersin
ltable_Month June
ltable_JournalRef The IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2018
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rtable_Title PlaneNet: Piece-wise Planar Reconstruction from a Single Image
rtable_Authors Chen Liu, Jimei Yang, Duygu Ceylan, Ersin Yumer, Yasutaka Furukawa
rtable_Month April
rtable_JournalRef NaN
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Name: 60, dtype: object
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ltable_Title Social GAN: Socially Acceptable Trajectories With Generative Adversarial Networks
ltable_Authors Gupta, Agrim and Johnson, Justin and Fei-Fei, Li and Savarimuthu, Dharmendra
ltable_Month June
ltable_JournalRef The IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2018
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| rtable_Authors          | Agrim Gupta, Justin Johnson, Li Fei-Fei, Silvio Savarese,  |
| rtable_Month            | March  |
| rtable_JournalRef       | NaN  |
| rtable_Up_System        | CM   |
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| ltable_Title            | Towards Human-Machine Cooperation: Self-Supervised Sample  |
| ltable_Authors          | Wang, Keze and Yan, Xiaopeng and Zhang, Dongyu and Zhang,  |
| ltable_Month            | June   |
| ltable_JournalRef       | The IEEE Conference on Computer Vision and Pattern Recogni |
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| rtable_Authors          | Keze Wang, Xiaopeng Yan, Dongyu Zhang, Lei Zhang, Liang Li |
| rtable_Month            | May  |
| rtable_JournalRef       | NaN  |
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| rtable_id               | 6772   |
| ltable_Tag              | Cao_2018_CVPR  |
| ltable_Title            | Pose-Robust Face Recognition via Deep Residual Equivariant |
| ltable_Authors          | Cao, Kaidi and Rong, Yu and Li, Cheng and Tang, Xiaoou and |
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| rtable_Authors          | Kaidi Cao, Yu Rong, Cheng Li, Xiaoou Tang, Chen Change Loy |
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| ltable_Authors          | Lin, Chen-Hsuan and Yumer, Ersin and Wang, Oliver and Shec |
| ltable_Month            | June   |
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estimating_precision_recall.ipynb - Colaboratory
Teaching Categories to Human Learners With Visual Explanat
Mac Aodha, Oisin and Su, Shihan and Chen, Yuxin and Perona
June
The IEEE Conference on Computer Vision and Pattern Recogni
CM
arXiv:1802.06924
Teaching Categories to Human Learners with Visual Explanat
Oisin Mac Aodha, Shihan Su, Yuxin Chen, Pietro Perona, Yis
February
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ltable_JournalRef The IEEE Conference on Computer Vision and Pattern Recogni
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rtable_Month February
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ltable_Authors Groueix, Thibault and Fisher, Matthew and Kim, Vladimir G.
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ltable_Authors He, Tong and Tian, Zhi and Huang, Weilin and Shen, Chunhua
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rtable_Month March

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| ltable_Title            | Learning Compositional Visual Concepts With Mutual Consist             |
| ltable_Authors          | Gong, Yunye and Karanam, Srikrishna and Wu, Ziyan and Peng, June       |
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| rtable_Title            | Learning Compositional Visual Concepts with Mutual Consistency         |
| rtable_Authors          | Yunye Gong, Srikrishna Karanam, Ziyan Wu, Kuan-Chuan Peng, March       |
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| ltable_Authors          | Li, Lerenhan and Pan, Jinshan and Lai, Wei-Sheng and Gao, June         |
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| rtable_Authors          | Lerenhan Li, Jinshan Pan, Wei-Sheng Lai, Changxin Gao, Nor April       |
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| ltable_Authors          | Pan, Bowen and Lin, Wuwei and Fang, Xiaolin and Huang, Chao June       |
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| rtable_Authors          | Bowen Pan, Wuwei Lin, Xiaolin Fang, Chaoqin Huang, Bolei Zhou February |
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| ltable_Authors          | Wang, Wei and Alameda-Pineda, Xavier and Xu, Dan and Fua, June         |
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| rtable_Authors          | Wei Wang, Xavier Alameda-Pineda, Dan Xu, Pascal Fua, Elisabeth       |
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| ltable_Authors          | Wu, Wayne and Qian, Chen and Yang, Shuo and Wang, Quan and           |
| ltable_Month            | June   |
| ltable_JournalRef       | The IEEE Conference on Computer Vision and Pattern Recognition       |
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| rtable_Tag              | arXiv:1805.10483   |
| rtable_Title            | Look at Boundary: A Boundary-Aware Face Alignment Algorithm          |
| rtable_Authors          | Wayne Wu, Chen Qian, Shuo Yang, Quan Wang, Yici Cai, Qianq           |
| rtable_Month            | May  |
| rtable_JournalRef       | NaN  |
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| ltable_Title            | Learning a Discriminative Feature Network for Semantic Segmentation  |
| ltable_Authors          | Yu, Changqian and Wang, Jingbo and Peng, Chao and Gao, Changxin      |
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| rtable_Authors          | Changqian Yu, Jingbo Wang, Chao Peng, Changxin Gao, Gang Yu          |
| rtable_Month            | April  |
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| ltable_Title            | End-to-End Learning of Motion Representation for Video Understanding |
| ltable_Authors          | Fan, Lijie and Huang, Wenbing and Gan, Chuang and Ermon, Stefano     |
| ltable_Month            | June   |
| ltable_JournalRef       | The IEEE Conference on Computer Vision and Pattern Recognition       |
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| rtable_Authors          | Lijie Fan, Wenbing Huang, Chuang Gan, Stefano Ermon, Boqir           |
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rtable_Authors Baoyuan Wu, Weidong Chen, Peng Sun, Wei Liu, Bernard Ghanem
rtable_Month   March
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Name: 76, dtype: object
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ltable_Authors Sigurdsson, Gunnar A. and Gupta, Abhinav and Schmid, Cordelia
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| rtable_Authors          | Zequn Jie, Pengfei Wang, Yonggen Ling, Bo Zhao, Yunchao Wei    |
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| ltable_Authors          | Peng, Chao and Xiao, Tete and Li, Zeming and Jiang, Yuning     |
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| ltable_Authors          | Hara, Kensho and Kataoka, Hirokatsu and Satoh, Yutaka          |
| ltable_Month            | June   |
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| rtable_Authors          | Kensho Hara, Hirokatsu Kataoka, Yutaka Satoh                   |
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| ltable_Authors          | Joo, Hanbyul and Simon, Tomas and Sheikh, Yaser                |
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| rtable_Authors          | Hanbyul Joo, Tomas Simon, Yaser Sheikh                         |
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| ltable_Title            | VITAL: VI <sup>s</sup> ual Tracking via Adversarial Learning             |
| ltable_Authors          | Song, Yibing and Ma, Chao and Wu, Xiaohe and Gong, Lijun et al.          |
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| rtable_Authors          | Yibing Song, Chao Ma, Xiaohe Wu, Lijun Gong, Linchao Bao, et al.         |
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| ltable_Authors          | Wang, Yaxing and van de Weijer, Joost and Herranz, Luis                  |
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| ltable_Authors          | Tulsiani, Shubham and Efros, Alexei A. and Malik, Jitendra               |
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| ltable_Authors          | Abu Farha, Yazan and Richard, Alexander and Gall, Juergen                |
| ltable_Month            | June   |
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ltable_Authors          Pernici, Federico and Bartoli, Federico and Bruni, Matteo
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| ltable_Title            | Crafting a Toolchain for Image Restoration by Deep Reinforcement Learning |
| ltable_Authors          | Yu, Ke and Dong, Chao and Lin, Liang and Change Loy, Chen                 |
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| rtable_Authors          | Ke Yu, Chao Dong, Liang Lin, Chen Change Loy                              |
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| ltable_Authors          | Zou, Chuhang and Colburn, Alex and Shan, Qi and Hoiem, Derek              |
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| ltable_Authors          | Wang, Wenguan and Shen, Jianbing and Guo, Fang and Cheng, Ming-Ming       |
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| rtable_Authors          | Wenguan Wang, Jianbing Shen, Fang Guo, Ming-Ming Cheng, Al M. Martinez    |
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| ltable_Title            | UV-GAN: Adversarial Facial UV Map Completion for Pose-Invariant Face Recognition    |
| ltable_Authors          | Deng, Jiankang and Cheng, Shiyang and Xue, Niannan and Zhou, Yuxiang                |
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| rtable_Title            | UV-GAN: Adversarial Facial UV Map Completion for Pose-invariant Face Recognition    |
| rtable_Authors          | Jiankang Deng, Shiyang Cheng, Niannan Xue, Yuxiang Zhou, Sijie Wang                 |
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| ltable_Title            | Multi-Oriented Scene Text Detection via Corner Localization                         |
| ltable_Authors          | Lyu, Pengyuan and Yao, Cong and Wu, Wenhao and Yan, Shuicheng                       |
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| rtable_Title            | Multi-Oriented Scene Text Detection via Corner Localization                         |
| rtable_Authors          | Pengyuan Lyu, Cong Yao, Wenhao Wu, Shuicheng Yan, Xiang Bai                         |
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| ltable_Authors          | Zhu, Yizhe and Elhoseiny, Mohamed and Liu, Bingchen and Peng, Xi                    |
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| rtable_Authors          | Yizhe Zhu, Mohamed Elhoseiny, Bingchen Liu, Xi Peng, Ahmed Elgammal                 |
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| ltable_Title            | DeLS-3D: Deep Localization and Segmentation With a 3D Semantic Segmentation Network |
| ltable_Authors          | Wang, Peng and Yang, Ruigang and Cao, Binbin and Xu, Wei and Yu, Jia                |
| ltable_Month            | June  |
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Deep Localization and Segmentation with a CNN  
Peng Wang, Ruigang Yang, Binbin Cao, Wei Xu, Yuanqing Lin  
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| ltable_Title             | A Closer Look at Spatiotemporal Convolutions for Action Recognition |
| ltable_Authors           | Tran, Du and Wang, Heng and Torresani, Lorenzo and Ray, Jamie       |
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| ltable_Authors           | Bloesch, Michael and Czarnowski, Jan and Clark, Ronald and          |
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| ltable_Authors           | Liu, Zichuan and Lin, Guosheng and Yang, Sheng and Feng, Jiashi     |
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| ltable_JournalRef        | The IEEE Conference on Computer Vision and Pattern Recognition      |
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ltable_Authors Liu, Xuebo and Liang, Ding and Yan, Shi and Chen, Dagui ar  
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rtable_Authors Xuebo Liu, Ding Liang, Shi Yan, Dagui Chen, Yu Qiao, Junji  
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The IEEE Conference on Computer Vision and Pattern Recogni
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| ltable_Authors           | Li, Dangwei and Chen, Xiaotang and Zhang, Zhang and Huang,   |
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| ltable_Authors           | Xu, Dan and Ouyang, Wanli and Wang, Xiaogang and Sebe, Nic   |
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HATS: Histograms of Averaged Time Surfaces for Robust Event Sironi, Amos and Brambilla, Manuele and Bourdis, Nicolas & June The IEEE Conference on Computer Vision and Pattern Recognition arXiv:1803.07913 HATS: Histograms of Averaged Time Surfaces for Robust Event Amos Sironi, Manuele Brambilla, Nicolas Bourdis, Xavier Lé March NaN CM NaN NaN Xiong\_2018\_CVPR Learning to Generate Time-Lapse Videos Using Multi-Stage [ Xiong, Wei and Luo, Wenhan and Ma, Lin and Liu, Wei and Lu June The IEEE Conference on Computer Vision and Pattern Recognition CM arXiv:1709.07592 Learning to Generate Time-Lapse Videos Using Multi-Stage [ Wei Xiong, Wenhan Luo, Lin Ma, Wei Liu, Jiebo Luo March NaN CM NaN NaN Birdal\_2018\_CVPR A Minimalist Approach to Type-Agnostic Detection of Quadri Birdal, Tolga and Busam, Benjamin and Navab, Nassir and Ilic June The IEEE Conference on Computer Vision and Pattern Recognition CM arXiv:1803.07191 A Minimalist Approach to Type-Agnostic Detection of Quadri Tolga Birdal, Benjamin Busam, Nassir Navab, Slobodan Ilic, March NaN CM NaN NaN Sankaranarayanan\_2018\_CVPR Learning From Synthetic Data: Addressing Domain Shift for Sankaranarayanan, Swami and Balaji, Yogesh and Jain, Arpit June The IEEE Conference on Computer Vision and Pattern Recognition CM arXiv:1711.06969 Learning from Synthetic Data: Addressing Domain Shift for Swami Sankaranarayanan, Yogesh Balaji, Arpit Jain, Ser Nam April NaN

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| ltable_Title      | LEGO: Learning Edge With Geometry All at Once by Watching   |
| ltable_Authors    | Yang, Zhenheng and Wang, Peng and Wang, Yang and Xu, Wei et |
| ltable_Month      | June  |
| ltable_JournalRef | The IEEE Conference on Computer Vision and Pattern Recogni  |
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| rtable_Title      | LEGO: Learning Edge with Geometry all at Once by Watching   |
| rtable_Authors    | Zhenheng Yang, Peng Wang, Yang Wang, Wei Xu, Ram Nevatia    |
| rtable_Month      | March   |
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| ltable_Title      | Domain Adaptive Faster R-CNN for Object Detection in the W  |
| ltable_Authors    | Chen, Yuhua and Li, Wen and Sakaridis, Christos and Dai, [  |
| ltable_Month      | June  |
| ltable_JournalRef | The TFFF Conference on Computer Vision and Pattern Recogni  |

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| rtable_Tag               | arXiv:1803.03243   |
| rtable_Title             | Domain Adaptive Faster R-CNN for Object Detection in the Wild  |
| rtable_Authors           | Yuhua Chen, Wen Li, Christos Sakaridis, Dengxin Dai, Luc Van Gool  |
| rtable_Month             | March  |
| rtable_JournalRef        | Nan  |
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| ltable_Tag               | Zhang_2018_CVPR  |
| ltable_Title             | The Unreasonable Effectiveness of Deep Features as a Perceptual Loss Function  |
| ltable_Authors           | Zhang, Richard and Isola, Phillip and Efros, Alexei A. and Shechtman, Eli  |
| ltable_Month             | June   |
| ltable_JournalRef        | The IEEE Conference on Computer Vision and Pattern Recognition   |
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| rtable_Tag               | arXiv:1801.03924   |
| rtable_Title             | The Unreasonable Effectiveness of Deep Features as a Perceptual Loss Function  |
| rtable_Authors           | Richard Zhang, Phillip Isola, Alexei A. Efros, Eli Shechtman, and Alexei A. Efros  |
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| ltable_Tag               | Li_2018_CVPR   |
| ltable_Title             | Independently Recurrent Neural Network (IndRNN): Building a Deep Recurrent Neural Network without Unrolled Backpropagation |
| ltable_Authors           | Li, Shuai and Li, Wanqing and Cook, Chris and Zhu, Ce and Gao, Yanbo   |
| ltable_Month             | June   |
| ltable_JournalRef        | The IEEE Conference on Computer Vision and Pattern Recognition   |
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| rtable_Title             | Independently Recurrent Neural Network (IndRNN): Building a Deep Recurrent Neural Network without Unrolled Backpropagation |
| rtable_Authors           | Shuai Li, Wanqing Li, Chris Cook, Ce Zhu, Yanbo Gao  |
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| ltable_Title             | Rethinking the Faster R-CNN Architecture for Temporal Action Recognition   |
| ltable_Authors           | Chao, Yu-Wei and Vijayanarasimhan, Sudheendra and Seybold, Bryan   |
| ltable_Month             | June   |
| ltable_JournalRef        | The IEEE Conference on Computer Vision and Pattern Recognition   |
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| rtable_Title             | Rethinking the Faster R-CNN Architecture for Temporal Action Recognition   |
| rtable_Authors           | Yu-Wei Chao, Sudheendra Vijayanarasimhan, Bryan Seybold, and Jitendra Malik  |
| rtable_Month             | April  |
| rtable_JournalRef        | Nan  |
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ltable_Authors    Xu, Dan and Wang, Wei and Tang, Hao and Liu, Hong and Sebe
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rtable_Title      Structured Attention Guided Convolutional Neural Fields for
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rtable_Month      March
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ltable_Authors    Xie, Jianwen and Zheng, Zilong and Gao, Ruiqi and Wang, We
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ltable_JournalRef The IEEE Conference on Computer Vision and Pattern Recogni
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rtable_Authors    Jianwen Xie, Zilong Zheng, Ruiqi Gao, Wenguan Wang, Song-Chi
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ltable_Authors    Ma, Chih-Yao and Kadav, Asim and Melvin, Iain and Kira, Zsolt
ltable_Month      June
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rtable_Tag        arXiv:1711.06330
rtable_Title      Attend and Interact: Higher-Order Object Interactions for
rtable_Authors    Chih-Yao Ma, Asim Kadav, Iain Melvin, Zsolt Kira, Ghassan
rtable_Month      March
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ltable_Authors    Yang, Wei and Ouyang, Wanli and Wang, Xiaolong and Ren, Ji
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ltable_JournalRef The IEEE Conference on Computer Vision and Pattern Recogni
ltable_Up_System   CM
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rtable_Title      3D Human Pose Estimation in the Wild by Adversarial Learnin

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rtable_Authors      Wei Yang, Wanli Ouyang, Xiaolong Wang, Jimmy Ren, Hongsher
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Name: 133, dtype: object
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ltable_Authors       Pumarola, Albert and Agudo, Antonio and Porzi, Lorenzo and
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ltable_JournalRef   The IEEE Conference on Computer Vision and Pattern Recogni
ltable_Up_System    CM
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rtable_Title         Geometry-Aware Network for Non-Rigid Shape Prediction from
rtable_Authors       Albert Pumarola, Antonio Agudo, Lorenzo Porzi, Alberto Sar
rtable_Month         September
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Name: 134, dtype: object
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ltable_Title         PoseTrack: A Benchmark for Human Pose Estimation and Track
ltable_Authors       Andriluka, Mykhaylo and Iqbal, Umar and Insafutdinov, Eldar
ltable_Month         June
ltable_JournalRef   The IEEE Conference on Computer Vision and Pattern Recogni
ltable_Up_System    CM
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rtable_Title         PoseTrack: A Benchmark for Human Pose Estimation and Track
rtable_Authors       Mykhaylo Andriluka, Umar Iqbal, Eldar Insafutdinov, Leonid
rtable_Month         April
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Name: 135, dtype: object
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ltable_Authors       Chen, Kai and Wang, Jiaqi and Yang, Shuo and Zhang, Xingcheng
ltable_Month         June
ltable_JournalRef   The IEEE Conference on Computer Vision and Pattern Recogni
ltable_Up_System    CM
rtable_Tag          arXiv:1804.05472
rtable_Title         Optimizing Video Object Detection via a Scale-Time Lattice
rtable_Authors       Kai Chen, Jiaqi Wang, Shuo Yang, Xingcheng Zhang, Yuanjun
rtable_Month         April
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|                          | ltable_title   | estimating_precision_recall.ipynb - Colaboratory           |
|                          | ltable_Authors   | Yu, Licheng and Lin, Zhe and Shen, Xiaohui and Yang, Jimei |
|                          | ltable_Month   | June   |
|                          | ltable_JournalRef  | The IEEE Conference on Computer Vision and Pattern Recogni |
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|                          | rtable_Tag   | arXiv:1801.08186   |
|                          | rtable_Title   | MAttNet: Modular Attention Network for Referring Expressio |
|                          | rtable_Authors   | Licheng Yu, Zhe Lin, Xiaohui Shen, Jimei Yang, Xin Lu, Mot |
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| ltable_Tag               | Runia_2018_CVPR  |  |
| ltable_Title             | Real-World Repetition Estimation by Div, Grad and Curl     |  |
| ltable_Authors           | Runia, Tom F. H. and Snoek, Cees G. M. and Smeulders, Arn  |  |
| ltable_Month             | June   |  |
| ltable_JournalRef        | The IEEE Conference on Computer Vision and Pattern Recogni |  |
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| rtable_Tag               | arXiv:1802.09971   |  |
| rtable_Title             | Real-World Repetition Estimation by Div, Grad and Curl     |  |
| rtable_Authors           | Tom F. H. Runia, Cees G. M. Snoek, Arnold W. M. Smeulders  |  |
| rtable_Month             | February   |  |
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| rtable_Up_System         | CM   |  |
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| ltable_Title             | CNN in MRF: Video Object Segmentation via Inference in a C |  |
| ltable_Authors           | Bao, Linchao and Wu, Baoyuan and Liu, Wei                  |  |
| ltable_Month             | June   |  |
| ltable_JournalRef        | The IEEE Conference on Computer Vision and Pattern Recogni |  |
| ltable_Up_System         | CM   |  |
| rtable_Tag               | arXiv:1803.09453   |  |
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| rtable_Authors           | Linchao Bao, Baoyuan Wu, Wei Liu                           |  |
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| ltable_Tag               | Pavlakos_2018_CVPR   |  |
| ltable_Title             | Learning to Estimate 3D Human Pose and Shape From a Single |  |
| ltable_Authors           | Pavlakos, Georgios and Zhu, Luyang and Zhou, Xiaowei and D |  |
| ltable_Month             | June   |  |
| ltable_JournalRef        | The IEEE Conference on Computer Vision and Pattern Recogni |  |
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| rtable_Tag               | arXiv:1805.04092   |  |
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| rtable_Authors           | Georgios Pavlakos, Luyang Zhu, Xiaowei Zhou, Kostas Daniil |  |
| rtable_Month             | May  |  |
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ltable_Authors         Mascharka, David and Tran, Philip and Soklaski, Ryan and Majumdar, Arjun
ltable_Month          June
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rtable_Authors         David Mascharka, Philip Tran, Ryan Soklaski, Arjun Majumdar, June
rtable_Month          July
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Name: 141, dtype: object
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ltable_Authors         Liu, Jiang and Gao, Chenqiang and Meng, Deyu and Hauptmann, Alexander G.
ltable_Month          June
ltable_JournalRef    The IEEE Conference on Computer Vision and Pattern Recognition
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rtable_Title          DecideNet: Counting Varying Density Crowds Through Attention
rtable_Authors         Jiang Liu, Chenqiang Gao, Deyu Meng, Alexander G. Hauptmar, June
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ltable_Title          Regularizing RNNs for Caption Generation by Reconstructing
ltable_Authors         Chen, Xinpeng and Ma, Lin and Jiang, Wenhao and Yao, Jian
ltable_Month          June
ltable_JournalRef    The IEEE Conference on Computer Vision and Pattern Recognition
ltable_Up_System      CM
rtable_Tag            arXiv:1803.11439
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rtable_Authors         Xinpeng Chen, Lin Ma, Wenhao Jiang, Jian Yao, Wei Liu
rtable_Month          April
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rtable_Up_System      CM
Name: 143, dtype: object
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ltable_Title          Dynamic Zoom-In Network for Fast Object Detection in Large-Scale Images
ltable_Authors         Gao, Mingfei and Yu, Ruichi and Li, Ang and Morariu, Vlad
ltable_Month          June
ltable_JournalRef    The IEEE Conference on Computer Vision and Pattern Recognition
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| rtable_Title             | Dynamic Zoom-in Network for Fast Object Detection in Large |
| rtable_Authors           | Mingfei Gao, Ruichi Yu, Ang Li, Vlad I. Morariu, Larry S.  |
| rtable_Month             | March  |
| rtable_JournalRef        | NaN  |
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| ltable_Title             | Disentangling Features in 3D Face Shapes for Joint Face Re |
| ltable_Authors           | Liu, Feng and Zhu, Ronghang and Zeng, Dan and Zhao, Qijun  |
| ltable_Month             | June   |
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| ltable_Title             | Image-Image Domain Adaptation With Preserved Self-Similari |
| ltable_Authors           | Deng, Weijian and Zheng, Liang and Ye, Qixiang and Kang, C |
| ltable_Month             | June   |
| ltable_JournalRef        | The IEEE Conference on Computer Vision and Pattern Recogni |
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| rtable_Tag               | arXiv:1711.07027   |
| rtable_Title             | Image-Image Domain Adaptation with Preserved Self-Similari |
| rtable_Authors           | Weijian Deng, Liang Zheng, Qixiang Ye, Guoliang Kang, Yi Y |
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| rtable_JournalRef        | NaN  |
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| ltable_Authors           | Xu, Xiaowei and Lu, Qing and Yang, Lin and Hu, Sharon and  |
| ltable_Month             | June   |
| ltable_JournalRef        | The IEEE Conference on Computer Vision and Pattern Recogni |
| ltable_Up_System         | CM   |
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| rtable_Title             | Quantization of Fully Convolutional Networks for Accurate  |
| rtable_Authors           | Xiaowei Xu, Qing Lu, Yu Hu, Lin Yang, Sharon Hu, Danny Che |
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ltable_Title      Zoom and Learn: Generalizing Deep Stereo Matching to Novel
ltable_Authors    Pang, Jiahao and Sun, Wenxiu and Yang, Chengxi and Ren, Ji
ltable_Month      June
ltable_JournalRef The IEEE Conference on Computer Vision and Pattern Recogni
ltable_Up_System  CM
rtable_Tag        arXiv:1803.06641
rtable_Title      Zoom and Learn: Generalizing Deep Stereo Matching to Novel
rtable_Authors    Jiahao Pang, Wenxiu Sun, Chengxi Yang, Jimmy Ren, Ruichao
rtable_Month      March
rtable_JournalRef NaN
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ltable_Title      CosFace: Large Margin Cosine Loss for Deep Face Recognitic
ltable_Authors    Wang, Hao and Wang, Yitong and Zhou, Zheng and Ji, Xing ar
ltable_Month      June
ltable_JournalRef The IEEE Conference on Computer Vision and Pattern Recogni
ltable_Up_System  CM
rtable_Tag        arXiv:1801.09414
rtable_Title      CosFace: Large Margin Cosine Loss for Deep Face Recognitic
rtable_Authors    Hao Wang, Yitong Wang, Zheng Zhou, Xing Ji, Dihong Gong, J
rtable_Month      April
rtable_JournalRef NaN
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Name: 149, dtype: object
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ltable_Title      RoadTracer: Automatic Extraction of Road Networks From Aer
ltable_Authors    Bastani, Favyen and He, Songtao and Abbar, Sofiane and Ali
ltable_Month      June
ltable_JournalRef The IEEE Conference on Computer Vision and Pattern Recogni
ltable_Up_System  CM
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rtable_Title      RoadTracer: Automatic Extraction of Road Networks from Aer
rtable_Authors    Favyen Bastani, Songtao He, Sofiane Abbar, Mohammad Alizad
rtable_Month      April
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ltable_Authors    Wang, Yan and Wang, Lequn and You, Yurong and Zou, Xu and
ltable_Month      June
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| rtable_Authors           | Yan Wang, Lequn Wang, Yurong You, Xu Zou, Vincent Chen, Se |
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| ltable_Tag               | Tulsiani_2018_CVPR   |
| ltable_Title             | Factoring Shape, Pose, and Layout From the 2D Image of a 3 |
| ltable_Authors           | Tulsiani, Shubham and Gupta, Saurabh and Fouhey, David F.  |
| ltable_Month             | June   |
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| ltable_Up_System         | CM   |
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| rtable_JournalRef        | NaN  |
| rtable_Up_System         | CM   |
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| ltable_Tag               | Chen_2018_CVPR   |
| ltable_Title             | MaskLab: Instance Segmentation by Refining Object Detectio |
| ltable_Authors           | Chen, Liang-Chieh and Hermans, Alexander and Papandreou, C |
| ltable_Month             | June   |
| ltable_JournalRef        | The IEEE Conference on Computer Vision and Pattern Recogni |
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| rtable_Title             | MaskLab: Instance Segmentation by Refining Object Detectio |
| rtable_Authors           | Liang-Chieh Chen, Alexander Hermans, George Papandreou, Fl |
| rtable_Month             | December   |
| rtable_JournalRef        | NaN  |
| rtable_Up_System         | CM   |
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| ltable_Tag               | Song_2018_CVPR   |
| ltable_Title             | Im2Pano3D: Extrapolating 360 Structure and Semantics Beyo  |
| ltable_Authors           | Song, Shuran and Zeng, Andy and Chang, Angel X. and Savva, |
| ltable_Month             | June   |
| ltable_JournalRef        | The IEEE Conference on Computer Vision and Pattern Recogni |
| ltable_Up_System         | CM   |
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| rtable_Title             | Im2Pano3D: Extrapolating 360 Structure and Semantics Beyo  |
| rtable_Authors           | Shuran Song, Andy Zeng, Angel X. Chang, Manolis Savva, Sil |
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| ltable_Tag               | Li_2018_CVPR   |
| ltable_Title             | Towards Faster Training of Global Covariance Pooling Netw  |

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| ltable_Authors           | Li, Peihua and Xie, Jiangtao and Wang, Qilong and Gao, Zil  |
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| ltable_JournalRef        | The IEEE Conference on Computer Vision and Pattern Recogni  |
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| rtable_Authors           | Peihua Li, Jiangtao Xie, Qilong Wang, Zilin Gao             |
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| rtable_JournalRef        | NaN   |
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| ltable_Tag               | Chen_2018_CVPR  |
| ltable_Title             | Robust Video Content Alignment and Compensation for Rain F  |
| ltable_Authors           | Chen, Jie and Tan, Cheen-Hau and Hou, Junhui and Chau, Lap  |
| ltable_Month             | June  |
| ltable_JournalRef        | The IEEE Conference on Computer Vision and Pattern Recogni  |
| ltable_Up_System         | CM  |
| rtable_Tag               | arXiv:1803.10433  |
| rtable_Title             | Robust Video Content Alignment and Compensation for Rain F  |
| rtable_Authors           | Jie Chen, Cheen-Hau Tan, Junhui Hou, Lap-Pui Chau, He Li    |
| rtable_Month             | March   |
| rtable_JournalRef        | NaN   |
| rtable_Up_System         | CM  |
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| ltable_id                | 3377  |
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| ltable_Tag               | Long_2018_CVPR  |
| ltable_Title             | Attention Clusters: Purely Attention Based Local Feature I  |
| ltable_Authors           | Long, Xiang and Gan, Chuang and de Melo, Gerard and Wu, Ji  |
| ltable_Month             | June  |
| ltable_JournalRef        | The IEEE Conference on Computer Vision and Pattern Recogni  |
| ltable_Up_System         | CM  |
| rtable_Tag               | arXiv:1711.09550  |
| rtable_Title             | Attention Clusters: Purely Attention Based Local Feature I  |
| rtable_Authors           | Xiang Long, Chuang Gan, Gerard de Melo, Jiajun Wu, Xiao Li  |
| rtable_Month             | November  |
| rtable_JournalRef        | NaN   |
| rtable_Up_System         | CM  |
| Name: 157, dtype: object |   |
| _id                      | 158   |
| ltable_id                | 3404  |
| rtable_id                | 6014  |
| ltable_Tag               | Xu_2018_CVPR  |
| ltable_Title             | SketchMate: Deep Hashing for Million-Scale Human Sketch Re  |
| ltable_Authors           | Xu, Peng and Huang, Yongye and Yuan, Tongtong and Pang, Kai |
| ltable_Month             | June  |
| ltable_JournalRef        | The IEEE Conference on Computer Vision and Pattern Recogni  |
| ltable_Up_System         | CM  |
| rtable_Tag               | arXiv:1804.01401  |
| rtable_Title             | SketchMate: Deep Hashing for Million-Scale Human Sketch Re  |
| rtable_Authors           | Peng Xu, Yongye Huang, Tongtong Yuan, Kaiyue Pang, Yi-Zhe   |
| rtable_Month             | April   |
| rtable_JournalRef        | NaN   |
| rtable_Up_System         | CM  |

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ltable_Authors         Choi, Jongwon and Jin Chang, Hyung and Fischer, Tobias and
ltable_Month           June
ltable_JournalRef     The IEEE Conference on Computer Vision and Pattern Recogniti
ltable_Up_System       CM
rtable_Tag             arXiv:1803.10537
rtable_Title           Context-aware Deep Feature Compression for High-speed Visu
rtable_Authors          Jongwon Choi, Hyung Jin Chang, Tobias Fischer, Sangdoo Yur
rtable_Month            March
rtable_JournalRef     NaN
rtable_Up_System       CM
Name: 159, dtype: object
_id                  160
ltable_id             2605
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ltable_Tag            Dong_2018_CVPR
ltable_Title          Supervision-by-Registration: An Unsupervised Approach to 3D
ltable_Authors         Dong, Xuanyi and Yu, Shou-I and Weng, Xinshuo and Wei, Shih-En
ltable_Month            June
ltable_JournalRef     The IEEE Conference on Computer Vision and Pattern Recogniti
ltable_Up_System       CM
rtable_Tag             arXiv:1807.00966
rtable_Title           Supervision-by-Registration: An Unsupervised Approach to 3D
rtable_Authors          Xuanyi Dong, Shou-I Yu, Xinshuo Weng, Shih-En Wei, Yi Yang
rtable_Month            July
rtable_JournalRef     NaN
rtable_Up_System       CM
Name: 160, dtype: object
_id                  161
ltable_id             3387
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ltable_Tag            Kuen_2018_CVPR
ltable_Title          Stochastic Downsampling for Cost-Adjustable Inference and
ltable_Authors         Kuen, Jason and Kong, Xiangfei and Lin, Zhe and Wang, Gang
ltable_Month            June
ltable_JournalRef     The IEEE Conference on Computer Vision and Pattern Recogniti
ltable_Up_System       CM
rtable_Tag             arXiv:1801.09335
rtable_Title           Stochastic Downsampling for Cost-Adjustable Inference and
rtable_Authors          Jason Kuen, Xiangfei Kong, Zhe Lin, Gang Wang, Jianxiong Yang
rtable_Month            January
rtable_JournalRef     NaN
rtable_Up_System       CM
Name: 161, dtype: object
_id                  162
ltable_id             3421
rtable_id             5989
ltable_Tag            Yokota_2018_CVPR
ltable_Title          Missing Slice Recovery for Tensors Using a Low-Rank Model
ltable_Authors         Yokota, Tatsuya and Erem, Burak and Guler, Seyhmus and War
ltable_Month            June
ltable_JournalRef     The IEEE Conference on Computer Vision and Pattern Recogniti

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| ltable_Up_System         | CM   |
| rtable_Tag               | arXiv:1804.01736   |
| rtable_Title             | Missing Slice Recovery for Tensors Using a Low-rank Model      |
| rtable_Authors           | Tatsuya Yokota, Burak Erem, Seyhmus Guler, Simon K. Warfield   |
| rtable_Month             | April  |
| rtable_JournalRef        | NaN  |
| rtable_Up_System         | CM   |
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| _id                      | 163  |
| ltable_id                | 2703   |
| rtable_id                | 8336   |
| ltable_Tag               | Xu_2018_CVPR   |
| ltable_Title             | AttnGAN: Fine-Grained Text to Image Generation With Attention  |
| ltable_Authors           | Xu, Tao and Zhang, Pengchuan and Huang, Qiuyuan and Zhang,     |
| ltable_Month             | June   |
| ltable_JournalRef        | The IEEE Conference on Computer Vision and Pattern Recognition |
| ltable_Up_System         | CM   |
| rtable_Tag               | arXiv:1711.10485   |
| rtable_Title             | AttnGAN: Fine-Grained Text to Image Generation with Attention  |
| rtable_Authors           | Tao Xu, Pengchuan Zhang, Qiuyuan Huang, Han Zhang, Zhe Gan     |
| rtable_Month             | November   |
| rtable_JournalRef        | NaN  |
| rtable_Up_System         | CM   |
| Name: 163, dtype: object |  |
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| ltable_id                | 2575   |
| rtable_id                | 5192   |
| ltable_Tag               | Fang_2018_CVPR   |
| ltable_Title             | Weakly and Semi Supervised Human Body Part Parsing via Pose    |
| ltable_Authors           | Fang, Hao-Shu and Lu, Guansong and Fang, Xiaolin and Xie,      |
| ltable_Month             | June   |
| ltable_JournalRef        | The IEEE Conference on Computer Vision and Pattern Recognition |
| ltable_Up_System         | CM   |
| rtable_Tag               | arXiv:1805.04310   |
| rtable_Title             | Weakly and Semi Supervised Human Body Part Parsing via Pose    |
| rtable_Authors           | Hao-Shu Fang, Guansong Lu, Xiaolin Fang, Jianwen Xie, Yu-Wen   |
| rtable_Month             | May  |
| rtable_JournalRef        | NaN  |
| rtable_Up_System         | CM   |
| Name: 164, dtype: object |  |
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| ltable_id                | 3312   |
| rtable_id                | 6219   |
| ltable_Tag               | Taira_2018_CVPR  |
| ltable_Title             | InLoc: Indoor Visual Localization With Dense Matching and      |
| ltable_Authors           | Taira, Hajime and Okutomi, Masatoshi and Sattler, Torsten      |
| ltable_Month             | June   |
| ltable_JournalRef        | The IEEE Conference on Computer Vision and Pattern Recognition |
| ltable_Up_System         | CM   |
| rtable_Tag               | arXiv:1803.10368   |
| rtable_Title             | InLoc: Indoor Visual Localization with Dense Matching and      |
| rtable_Authors           | Hajime Taira, Masatoshi Okutomi, Torsten Sattler, Mircea C     |
| rtable_Month             | April  |
| rtable_JournalRef        | NaN  |
| rtable_Up_System         | CM   |
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9556  

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Xu_2018_CVPR  

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A Causal And-Or Graph Model for Visibility Fluent Reasonir  

ltable_Authors  

Xu, Yuanlu and Qin, Lei and Liu, Xiaobai and Xie, Jianwen  

ltable_Month  

June  

ltable_JournalRef  

ltable_Up_System  

rtable_Tag  

arXiv:1709.05437  

rtable_Title  

A Causal And-Or Graph Model for Visibility Fluent Reasonir  

rtable_Authors  

Yuanlu Xu, Lei Qin, Xiaobai Liu, Jianwen Xie, Song-Chun Z  

rtable_Month  

March  

rtable_JournalRef  

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168  

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Pan_2018_CVPR  

ltable_Title  

Learning Dual Convolutional Neural Networks for Low-Level  

ltable_Authors  

Pan, Jinshan and Liu, Sifei and Sun, Deqing and Zhang, Ji  

ltable_Month  

June  

ltable_JournalRef  

ltable_Up_System  

rtable_Tag  

arXiv:1805.05020  

rtable_Title  

Learning Dual Convolutional Neural Networks for Low-Level  

rtable_Authors  

Jinshan Pan, Sifei Liu, Deqing Sun, Jiawei Zhang, Yang Liu  

rtable_Month  

May  

rtable_JournalRef  

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169  

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2978  

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8342  

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Xia_2018_CVPR  

ltable_Title  

DOTA: A Large-Scale Dataset for Object Detection in Aerial  

ltable_Authors  

Xia, Gui-Song and Bai, Xiang and Ding, Jian and Zhu, Zhen  

ltable_Month  

June  

ltable_JournalRef  

ltable_Up_System  

rtable_Tag  

arXiv:1711.10398  

rtable_Title  

DOTA: A Large-scale Dataset for Object Detection in Aerial

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rtable_Authors      Gui-Song Xia, Xiang Bai, Jian Ding, Zhen Zhu, Serge Belong
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Name: 169, dtype: object
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ltable_Title        Shift: A Zero FLOP, Zero Parameter Alternative to Spatial
ltable_Authors      Wu, Bichen and Wan, Alvin and Yue, Xiangyu and Jin, Peter
ltable_Month        June
ltable_JournalRef   The IEEE Conference on Computer Vision and Pattern Recogni
ltable_Up_System    CM
rtable_Tag          arXiv:1711.08141
rtable_Title        Shift: A Zero FLOP, Zero Parameter Alternative to Spatial
rtable_Authors      Bichen Wu, Alvin Wan, Xiangyu Yue, Peter Jin, Sicheng Zhao
rtable_Month        December
rtable_JournalRef   NaN
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Name: 170, dtype: object
_id                171
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ltable_Title        NISP: Pruning Networks Using Neuron Importance Score Propa
ltable_Authors      Yu, Ruichi and Li, Ang and Chen, Chun-Fu and Lai, Jui-Hsin
ltable_Month        June
ltable_JournalRef   The IEEE Conference on Computer Vision and Pattern Recogni
ltable_Up_System    CM
rtable_Tag          arXiv:1711.05908
rtable_Title        NISP: Pruning Networks using Neuron Importance Score Propa
rtable_Authors      Ruichi Yu, Ang Li, Chun-Fu Chen, Jui-Hsin Lai, Vlad I. Moroz
rtable_Month        March
rtable_JournalRef   NaN
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Name: 171, dtype: object
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ltable_id           2874
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ltable_Title        Pix3D: Dataset and Methods for Single-Image 3D Shape Model
ltable_Authors      Sun, Xingyuan and Wu, Jiajun and Zhang, Xiuming and Zhang,
ltable_Month        June
ltable_JournalRef   The IEEE Conference on Computer Vision and Pattern Recogni
ltable_Up_System    CM
rtable_Tag          arXiv:1804.04610
rtable_Title        Pix3D: Dataset and Methods for Single-Image 3D Shape Model
rtable_Authors      Xingyuan Sun, Jiajun Wu, Xiuming Zhang, Zhoutong Zhang, Chen
rtable_Month        April
rtable_JournalRef   NaN
rtable_Up_System    CM
Name: 172, dtype: object
_id                173
ltable_id           3504
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ltable_Tag          Teixeira_2018_CVPR
ltable_Title        Generating Synthetic X-Ray Images of a Person From the Sur

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ltable_Authors              Teixeira, Brian and Singh, Vivek and Chen, Terrence and Ma
ltable_Month                June
ltable_JournalRef           The IEEE Conference on Computer Vision and Pattern Recognition
ltable_Up_System             CM
rtable_Tag                  arXiv:1805.00553
rtable_Title                Generating Synthetic X-ray Images of a Person from the Survey
rtable_Authors              Brian Teixeira, Vivek Singh, Terrence Chen, Kai Ma, Birgil
rtable_Month                May
rtable_JournalRef           NaN
rtable_Up_System             CM
Name: 173, dtype: object

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ltable_Tag                  Gurari_2018_CVPR
ltable_Title                VizWiz Grand Challenge: Answering Visual Questions From Baidu
ltable_Authors              Gurari, Danna and Li, Qing and Stangl, Abigale J. and Guo, Chi
ltable_Month                June
ltable_JournalRef           The IEEE Conference on Computer Vision and Pattern Recognition
ltable_Up_System             CM
rtable_Tag                  arXiv:1802.08218
rtable_Title                VizWiz Grand Challenge: Answering Visual Questions from Baidu
rtable_Authors              Danna Gurari, Qing Li, Abigale J. Stangl, Anhong Guo, Chi
rtable_Month                May
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Name: 174, dtype: object

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ltable_Title                Self-Supervised Multi-Level Face Model Learning for Monocular
ltable_Authors              Tewari, Ayush and Zollhfer, Michael and Garrido, Pablo and
ltable_Month                June
ltable_JournalRef           The IEEE Conference on Computer Vision and Pattern Recognition
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rtable_Tag                  arXiv:1712.02859
rtable_Title                Self-supervised Multi-level Face Model Learning for Monocular
rtable_Authors              Ayush Tewari, Michael Zollhfer, Pablo Garrido, Florian Ber
rtable_Month                March
rtable_JournalRef           NaN
rtable_Up_System             CM
Name: 175, dtype: object

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ltable_Title                Lose the Views: Limited Angle CT Reconstruction via Implicit
ltable_Authors              Anirudh, Rushil and Kim, Hyojin and Thiagarajan, Jayaraman
ltable_Month                June
ltable_JournalRef           The IEEE Conference on Computer Vision and Pattern Recognition
ltable_Up_System             CM
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rtable_Authors              Rushil Anirudh, Hyojin Kim, Jayaraman J. Thiagarajan, K. A
rtable_Month                July
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rtable_Up_System             CM
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ltable_Title Optical Flow Guided Feature: A Fast and Robust Motion Repr
ltable_Authors Sun, Shuyang and Kuang, Zhanghui and Sheng, Lu and Ouyang,
ltable_Month June
ltable_JournalRef The IEEE Conference on Computer Vision and Pattern Recogni
ltable_Up_System CM
rtable_Tag arXiv:1711.11152
rtable_Title Optical Flow Guided Feature: A Fast and Robust Motion Repr
rtable_Authors Shuyang Sun, Zhanghui Kuang, Wanli Ouyang, Lu Sheng, Wei Z
rtable_Month July
rtable_JournalRef NaN
rtable_Up_System CM
Name: 177, dtype: object
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ltable_id     3199
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ltable_Tag   Wu_2018_CVPR
ltable_Title Are You Talking to Me? Reasoned Visual Dialog Generation 1
ltable_Authors Wu, Qi and Wang, Peng and Shen, Chunhua and Reid, Ian and
ltable_Month June
ltable_JournalRef The IEEE Conference on Computer Vision and Pattern Recogni
ltable_Up_System CM
rtable_Tag arXiv:1711.07613
rtable_Title Are You Talking to Me? Reasoned Visual Dialog Generation t
rtable_Authors Qi Wu, Peng Wang, Chunhua Shen, Ian Reid, Anton van den He
rtable_Month November
rtable_JournalRef NaN
rtable_Up_System CM
Name: 178, dtype: object
_id           179
ltable_id     3306
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ltable_Tag   Islam_2018_CVPR
ltable_Title Revisiting Salient Object Detection: Simultaneous Detectio
ltable_Authors Amirul Islam, Md and Kalash, Mahmoud and Bruce, Neil D. B.
ltable_Month June
ltable_JournalRef The IEEE Conference on Computer Vision and Pattern Recogni
ltable_Up_System CM
rtable_Tag arXiv:1803.05082
rtable_Title Revisiting Salient Object Detection: Simultaneous Detectio
rtable_Authors Md Amirul Islam, Mahmoud Kalash, Neil D. B. Bruce
rtable_Month March
rtable_JournalRef NaN
rtable_Up_System CM
Name: 179, dtype: object
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ltable_Tag   Zhan_2018_CVPR
ltable_Title Unsupervised Learning of Monocular Depth Estimation and Vi
ltable_Authors Zhan, Huangying and Garg, Ravi and Saroj Weerasekera, Chan
ltable_Month June
ltable_JournalRef The IEEE Conference on Computer Vision and Pattern Recogni

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ltable_up_System CM
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rtable_Title Unsupervised Learning of Monocular Depth Estimation and Vi
rtable_Authors Huangying Zhan, Ravi Garg, Chamara Saroj Weerasekera, Keji
rtable_Month April
rtable_JournalRef NaN
rtable_Up_System CM
Name: 180, dtype: object
_id 181
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ltable_Tag Yu_2018_CVPR
ltable_Title Recurrent Saliency Transformation Network: Incorporating M
ltable_Authors Yu, Qihang and Xie, Lingxi and Wang, Yan and Zhou, Yuyin et al
ltable_Month June
ltable_JournalRef The IEEE Conference on Computer Vision and Pattern Recognit
ltable_Up_System CM
rtable_Tag arXiv:1709.04518
rtable_Title Recurrent Saliency Transformation Network: Incorporating M
rtable_Authors Qihang Yu, Lingxi Xie, Yan Wang, Yuyin Zhou, Elliot K. Fis
rtable_Month April
rtable_JournalRef NaN
rtable_Up_System CM
Name: 181, dtype: object
_id 182
ltable_id 3007
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ltable_Tag Zhuang_2018_CVPR
ltable_Title Parallel Attention: A Unified Framework for Visual Object
ltable_Authors Zhuang, Bohan and Wu, Qi and Shen, Chunhua and Reid, Ian et al
ltable_Month June
ltable_JournalRef The IEEE Conference on Computer Vision and Pattern Recognit
ltable_Up_System CM
rtable_Tag arXiv:1711.06370
rtable_Title Parallel Attention: A Unified Framework for Visual Object
rtable_Authors Bohan Zhuang, Qi Wu, Chunhua Shen, Ian Reid, Anton van der
rtable_Month November
rtable_JournalRef NaN
rtable_Up_System CM
Name: 182, dtype: object
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ltable_Title TieNet: Text-Image Embedding Network for Common Thorax Dis
ltable_Authors Wang, Xiaosong and Peng, Yifan and Lu, Le and Lu, Zhiyong et al
ltable_Month June
ltable_JournalRef The IEEE Conference on Computer Vision and Pattern Recognit
ltable_Up_System CM
rtable_Tag arXiv:1801.04334
rtable_Title TieNet: Text-Image Embedding Network for Common Thorax Dis
rtable_Authors Xiaosong Wang, Yifan Peng, Le Lu, Zhiyong Lu, Ronald M. Summers et al
rtable_Month January
rtable_JournalRef NaN
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Name: 183, dtype: object
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ltable_Title      DeepVoting: A Robust and Explainable Deep Network for Semantic Segmentation
ltable_Authors    Zhang, Zhishuai and Xie, Cihang and Wang, Jianyu and Xie, June
ltable_Month      June
ltable_JournalRef The IEEE Conference on Computer Vision and Pattern Recognition
ltable_Up_System  CM
rtable_Tag        arXiv:1709.04577
rtable_Title      DeepVoting: A Robust and Explainable Deep Network for Semantic Segmentation
rtable_Authors    Zhishuai Zhang, Cihang Xie, Jianyu Wang, Lingxi Xie, Alan March
rtable_Month      March
rtable_JournalRef NaN
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Name: 184, dtype: object
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ltable_id          2699
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ltable_Tag        Ge_2018_CVPR
ltable_Title      Multi-Evidence Filtering and Fusion for Multi-Label Classification
ltable_Authors    Ge, Weifeng and Yang, Sibei and Yu, Yizhou
ltable_Month      June
ltable_JournalRef The IEEE Conference on Computer Vision and Pattern Recognition
ltable_Up_System  CM
rtable_Tag        arXiv:1802.09129
rtable_Title      Multi-Evidence Filtering and Fusion for Multi-Label Classification
rtable_Authors    Weifeng Ge, Sibei Yang, Yizhou Yu
rtable_Month      February
rtable_JournalRef NaN
rtable_Up_System  CM
Name: 185, dtype: object
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ltable_id          3059
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ltable_Tag        Shin_2018_CVPR
ltable_Title      EPINET: A Fully-Convolutional Neural Network Using Epipolar Geometry
ltable_Authors    Shin, Changha and Jeon, Hae-Gon and Yoon, Youngjin and So June
ltable_Month      June
ltable_JournalRef The IEEE Conference on Computer Vision and Pattern Recognition
ltable_Up_System  CM
rtable_Tag        arXiv:1804.02379
rtable_Title      EPINET: A Fully-Convolutional Neural Network Using Epipolar Geometry
rtable_Authors    Changha Shin, Hae-Gon Jeon, Youngjin Yoon, In So Kweon, Seung-Jo Kim
rtable_Month      April
rtable_JournalRef NaN
rtable_Up_System  CM
Name: 186, dtype: object
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ltable_id          3525
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ltable_Tag        Yan_2018_CVPR
ltable_Title      Deep Lesion Graphs in the Wild: Relationship Learning and Segmentation
ltable_Authors    Yan, Ke and Wang, Xiaosong and Lu, Le and Zhang, Ling and June
ltable_Month      June
ltable_JournalRef The IEEE Conference on Computer Vision and Pattern Recognition
ltable_Up_System  CM
rtable_Tag        arXiv:1711.10535
rtable_Title      Deep Lesion Graphs in the Wild: Relationship Learning and Segmentation
rtable_Authors    Ke Yan, Xiaosong Wang, Le Lu, Ling Zhang, Adam Harrison, Mingming Cheng
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 rtable\_JournalRef CM  
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 ltable\_Tag Moon\_2018\_CVPR  
 ltable\_Title V2V-PoseNet: Voxel-to-Voxel Prediction Network for Accurate  
 ltable\_Authors Moon, Gyeongsik and Yong Chang, Ju and Mu Lee, Kyoung  
 ltable\_Month June  
 ltable\_JournalRef The IEEE Conference on Computer Vision and Pattern Recognition  
 ltable\_Up\_System CM  
 rtable\_Tag arXiv:1711.07399  
 rtable\_Title V2V-PoseNet: Voxel-to-Voxel Prediction Network for Accurate  
 rtable\_Authors Gyeongsik Moon, Ju Yong Chang, Kyoung Mu Lee  
 rtable\_Month August  
 rtable\_JournalRef NaN  
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 ltable\_Tag Yu\_2018\_CVPR  
 ltable\_Title DoubleFusion: Real-Time Capture of Human Performances With  
 ltable\_Authors Yu, Tao and Zheng, Zerong and Guo, Kaiwen and Zhao, Jianhui  
 ltable\_Month June  
 ltable\_JournalRef The IEEE Conference on Computer Vision and Pattern Recognition  
 ltable\_Up\_System CM  
 rtable\_Tag arXiv:1804.06023  
 rtable\_Title DoubleFusion: Real-time Capture of Human Performances with  
 rtable\_Authors Tao Yu, Zerong Zheng, Kaiwen Guo, Jianhui Zhao, Qionghai Dai  
 rtable\_Month April  
 rtable\_JournalRef NaN  
 rtable\_Up\_System CM  
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 ltable\_Tag Marsden\_2018\_CVPR  
 ltable\_Title People, Penguins and Petri Dishes: Adapting Object Counting  
 ltable\_Authors Marsden, Mark and McGuinness, Kevin and Little, Suzanne and  
 ltable\_Month June  
 ltable\_JournalRef The IEEE Conference on Computer Vision and Pattern Recognition  
 ltable\_Up\_System CM  
 rtable\_Tag arXiv:1711.05586  
 rtable\_Title People, Penguins and Petri Dishes: Adapting Object Counting  
 rtable\_Authors Mark Marsden, Kevin McGuinness, Suzanne Little, Ciara E. Kelly  
 rtable\_Month November  
 rtable\_JournalRef NaN  
 rtable\_Up\_System CM  
 Name: 190, dtype: object  
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 ltable\_id 1754  
 rtable\_id 5986  
 ltable\_Tag Jetley\_2016\_CVPR  
 ltable\_Title End-To-End Saliency Mapping via Probability Distribution Function  
 ltable\_Authors ...

estimating\_precision\_recall.ipynb - Colaboratory

|                          |   |
|--------------------------|---|
| ltable_Authors           | Jetley, Saumya and Murray, Naila and Vig, Eleonora                        |
| ltable_Month             | June  |
| ltable_JournalRef        | The IEEE Conference on Computer Vision and Pattern Recognition            |
| ltable_Up_System         | CM  |
| rtable_Tag               | arXiv:1804.01793  |
| rtable_Title             | End-to-End Saliency Mapping via Probability Distribution Function         |
| rtable_Authors           | Saumya Jetley, Naila Murray, Eleonora Vig                                 |
| rtable_Month             | April   |
| rtable_JournalRef        | Proceedings of IEEE Conference on Computer Vision and Pattern Recognition |
| rtable_Up_System         | CM  |
| Name: 191, dtype: object |   |
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| ltable_id                | 2548  |
| rtable_id                | 9785  |
| ltable_Tag               | Kannan_2017_CVPR  |
| ltable_Title             | Newton-Type Methods for Inference in Higher-Order Markov Functions        |
| ltable_Authors           | Kannan, Hariprasad and Komodakis, Nikos and Paragios, Nikos               |
| ltable_Month             | July  |
| ltable_JournalRef        | The IEEE Conference on Computer Vision and Pattern Recognition            |
| ltable_Up_System         | CM  |
| rtable_Tag               | arXiv:1709.01237  |
| rtable_Title             | Newton-type Methods for Inference in Higher-Order Markov Functions        |
| rtable_Authors           | Hariprasad Kannan, Nikos Komodakis, Nikos Paragios                        |
| rtable_Month             | September   |
| rtable_JournalRef        | Poster at IEEE International Conference on Computer Vision                |
| rtable_Up_System         | CM  |
| Name: 192, dtype: object |   |
| <u>id</u>                | 193   |
| ltable_id                | 2839  |
| rtable_id                | 8003  |
| ltable_Tag               | Yuan_2018_CVPR  |
| ltable_Title             | Depth-Based 3D Hand Pose Estimation: From Current Achievements            |
| ltable_Authors           | Yuan, Shanxin and Garcia-Hernando, Guillermo and Stenger, Bjorn           |
| ltable_Month             | June  |
| ltable_JournalRef        | The IEEE Conference on Computer Vision and Pattern Recognition            |
| ltable_Up_System         | CM  |
| rtable_Tag               | arXiv:1712.03917  |
| rtable_Title             | Depth-Based 3D Hand Pose Estimation: From Current Achievements            |
| rtable_Authors           | Shanxin Yuan, Guillermo Garcia-Hernando, Bjorn Stenger, György Galambos   |
| rtable_Month             | March   |
| rtable_JournalRef        | NAN   |
| rtable_Up_System         | CM  |
| Name: 193, dtype: object |   |
| <u>id</u>                | 194   |
| ltable_id                | 2963  |
| rtable_id                | 6009  |
| ltable_Tag               | Lawin_2018_CVPR   |
| ltable_Title             | Density Adaptive Point Set Registration                                   |
| ltable_Authors           | J_remo Lawin, Felix and Danelljan, Martin and Shahbaz Khan                |
| ltable_Month             | June  |
| ltable_JournalRef        | The IEEE Conference on Computer Vision and Pattern Recognition            |
| ltable_Up_System         | CM  |
| rtable_Tag               | arXiv:1804.01495  |
| rtable_Title             | Density Adaptive Point Set Registration                                   |
| rtable_Authors           | Felix J_remo Lawin, Martin Danelljan, Fahad Shahbaz Khan, Farid Odeh      |
| rtable_Month             | October   |
| rtable_JournalRef        | The IEEE Conference on Computer Vision and Pattern Recognition            |
| rtable_Up_System         | CM  |

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ltable_Title  Event-Based Vision Meets Deep Learning on Steering Predict
ltable_Authors Maqueda, Ana I. and Loquercio, Antonio and Gallego, Guillermo
ltable_Month   June
ltable_JournalRef The IEEE Conference on Computer Vision and Pattern Recognition
ltable_Up_System CM
rtable_Tag    arXiv:1804.01310
rtable_Title  Event-based Vision meets Deep Learning on Steering Predict
rtable_Authors Ana I. Maqueda, Antonio Loquercio, Guillermo Gallego, Narciso
rtable_Month   April
rtable_JournalRef IEEE Conference on Computer Vision and Pattern Recognition
rtable_Up_System CM
Name: 195, dtype: object
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ltable_Tag    Miraldo_2018_CVPR
ltable_Title  Analytical Modeling of Vanishing Points and Curves in Catastrophe
ltable_Authors Miraldo, Pedro and Eiras, Francisco and Ramalingam, Srikumar
ltable_Month   June
ltable_JournalRef The IEEE Conference on Computer Vision and Pattern Recognition
ltable_Up_System CM
rtable_Tag    arXiv:1804.09460
rtable_Title  Analytical Modeling of Vanishing Points and Curves in Catastrophe
rtable_Authors Pedro Miraldo, Francisco Eiras, Srikumar Ramalingam
rtable_Month   April
rtable_JournalRef IEEE/CVF Conference on Computer Vision and Pattern Recognition
rtable_Up_System CM
Name: 196, dtype: object
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ltable_id     2716
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ltable_Tag    Bargal_2018_CVPR
ltable_Title  Excitation Backprop for RNNs
ltable_Authors Adel Bargal, Sarah Zunino, Andrea Kim, Donghyun Kim
ltable_Month   June
ltable_JournalRef The IEEE Conference on Computer Vision and Pattern Recognition
ltable_Up_System CM
rtable_Tag    arXiv:1711.06778
rtable_Title  Excitation Backprop for RNNs
rtable_Authors Sarah Adel Bargal, Andrea Zunino, Donghyun Kim, Jianming Zhang
rtable_Month   March
rtable_JournalRef IEEE Conference on Computer Vision and Pattern Recognition
rtable_Up_System CM
Name: 197, dtype: object
_id           198
ltable_id     2879
rtable_id     6134
ltable_Tag    Grabner_2018_CVPR
```

## Module: estimate\_precision\_recall

# Description: the below code helps you get an estimation of P/R on the candidate set.

```

rtable Un System    CM

import pandas as pd
from scipy.stats import norm
from numpy import sqrt

delta = .05
Z = norm.ppf(1 - (delta / 2))

def estimate_PR(labeled_pairs, reduced_cands, predicted_matches):
    """
    labeled_pairs - a pandas dataframe with schema id1,id2,label
        Note label needs to be Boolean

    reduced_cands - a pandas dataframe with schema id1,id2
    predicted_matches - a pandas dataframe with schema id1,id2

    return:
        (recall lower bound, recall upper bound), (precision lower bound, precision
    ...

    labeled_pairs.drop_duplicates(inplace=True)
    labeled_pairs.columns = ['id1', 'id2', 'label']
    reduced_cands.columns = ['id1', 'id2']
    reduced_cand_set = set(zip(reduced_cands.id1, reduced_cands.id2))
    predicted_matches = set(zip(predicted_matches.id1, predicted_matches.id2))

    # estimate the recall
    # number of positives in the labeled sample
    actual_pos = float(labeled_pairs.label.sum())
    # the maximum number of postives in the candidate set
    max_actual_pos = float(actual_pos + len(reduced_cand_set) - len(labeled_pairs))

    # true positives in the labeled sample
    true_pos = float(labeled_pairs.apply(lambda x : (x['id1'], x['id2']) in predicted_matches).sum())
    #estimated recall
    recall = float(true_pos / actual_pos)

    recall_error = Z * sqrt( ((recall * (1 - recall)) / (actual_pos)) * ((max_actual_pos - len(reduced_cand_set)) * (len(reduced_cand_set) - len(predicted_matches))) )

    # estimate Precision
    labeled_set = set(zip(labeled_pairs.id1, labeled_pairs.id2))
    predicted_pos = float(len(labeled_set & predicted_matches))

    predicted_pos_in_reduced_cand_set = float(len(reduced_cand_set & predicted_matches))

    alpha = predicted_pos_in_reduced_cand_set / len(predicted_matches)
    precision = alpha * (true_pos / predicted_pos)

    precision_error = alpha * Z * sqrt( ((precision * (1 - precision)) / predicted_pos) * ((max_actual_pos - len(labeled_set)) * (len(labeled_set) - len(predicted_matches))) )

    return ((recall - recall_error, recall + recall_error),
            (precision - precision_error, precision + precision_error))

```

## [NEED MODIFICATION: Modify this cell to point to

```
L = B.copy(deep=True)
L['label'] = L['label'].astype('bool')

# print(L)
# print(B['label'].sum()/397.)

# read the labeled pairs file, i.e. the file with the labels
# labeled_pairs = pd.read_csv('labeled_pairs.csv')

print(estimate_PR(L, dfc, dfp))
print(estimate_PR(L, Ci, dfp)).)

↳ ((0.9828137525486433, 1.0054215415690038), (0.9325870283311566, 0.9451907494466
((0.9941176470588236, 0.9941176470588236), (0.9012651926029382, 0.9159391084723
```

**Alternatively if you run into issues running this script  
on your laptop you can use**

<https://colab.research.google.com/notebooks/welcome.ipynb>

