Combining Machine Learning and Data-driven Approach for AI Services

Speaker : Xu Lu

College of Informatics

Research fields: Machine Learning/Computer Vision/Data Mining

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1 Introduction
2 Research Achievements
3 CVLH AI Cloud Platform
4 Future Work

1

Introduction

1 Introduction

We are pacing into big data and AI era.

✓ Over 1 billion images are uploaded on WeChat daily —— Tencent Research

✓ Google AlphaGo resurged 3rd AI

✓ AI is thought to be the next generation of industrial revolution

1 Introduction

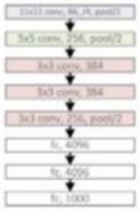
GPU

Big Data

Deep Learning

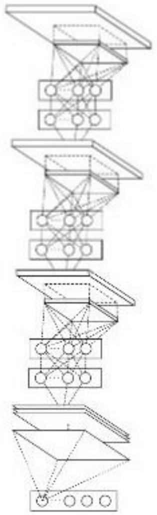
1 Introduction

AlexNet



VGG

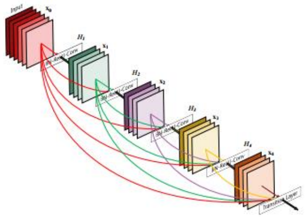
NIN



GoogleNet

ResNet

DenseNet



2

Research Achievements

2 Research Achievements

Computer Vision

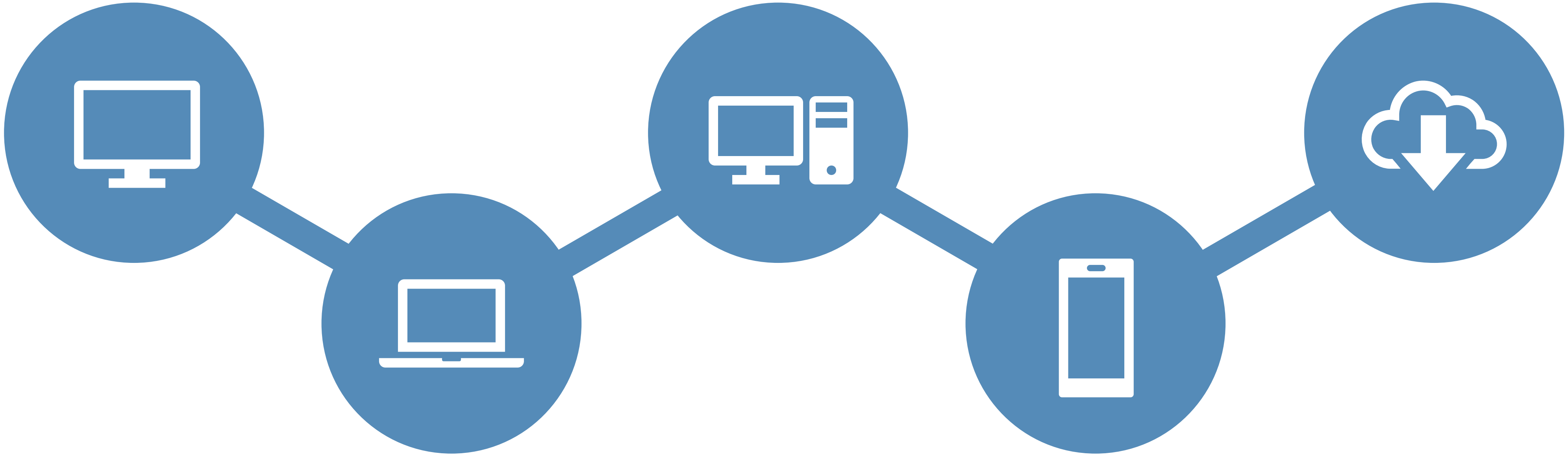
Visual Tracking; Face Recognition

Natural Language Processing

Sentiment Analysis; Text Classification

Data Mining

Real-world Applications



2 Research Achievements

CVPR 16

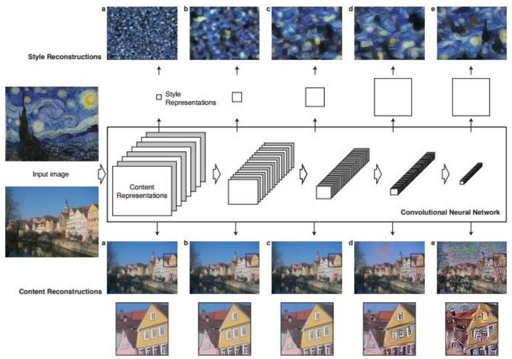
Image Style Transfer Using Convolutional Neural Networks

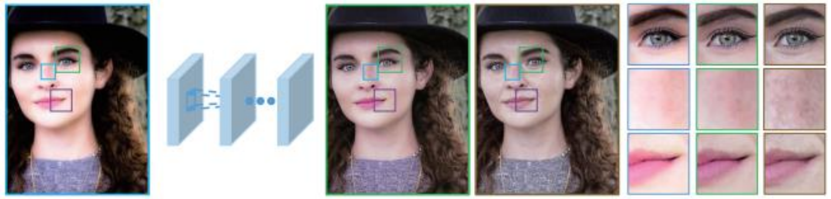
ICCV 2017 Oral Paper(2.1%)

Makeup-Go: Blind Reversion of Portrait Edit

ACMMM 17

Social Media Prediction Challenge


Style Reconstructions
a
b
c
d
e
Style Representations
Input image
Content Representations
Convolutional Neural Network
a
b
c
d
e
Content Reconstructions


(a) Edited Image (b) CNN (c) Output (d) Groundtruth (e) Close-up

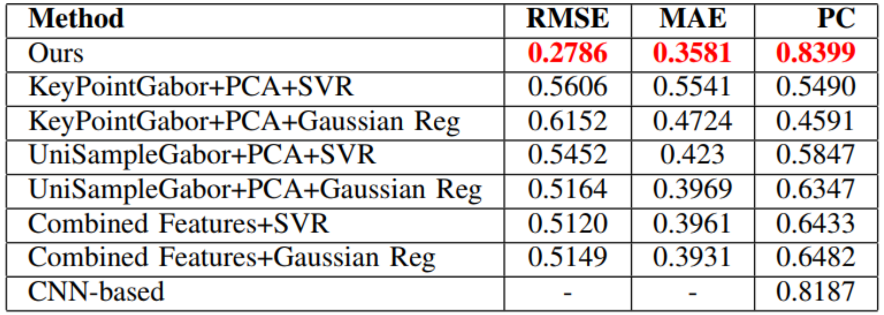
UserA
UserB
UserC
Hot

Figure 2: Some sample images from our prediction training dataset with hot annotation.

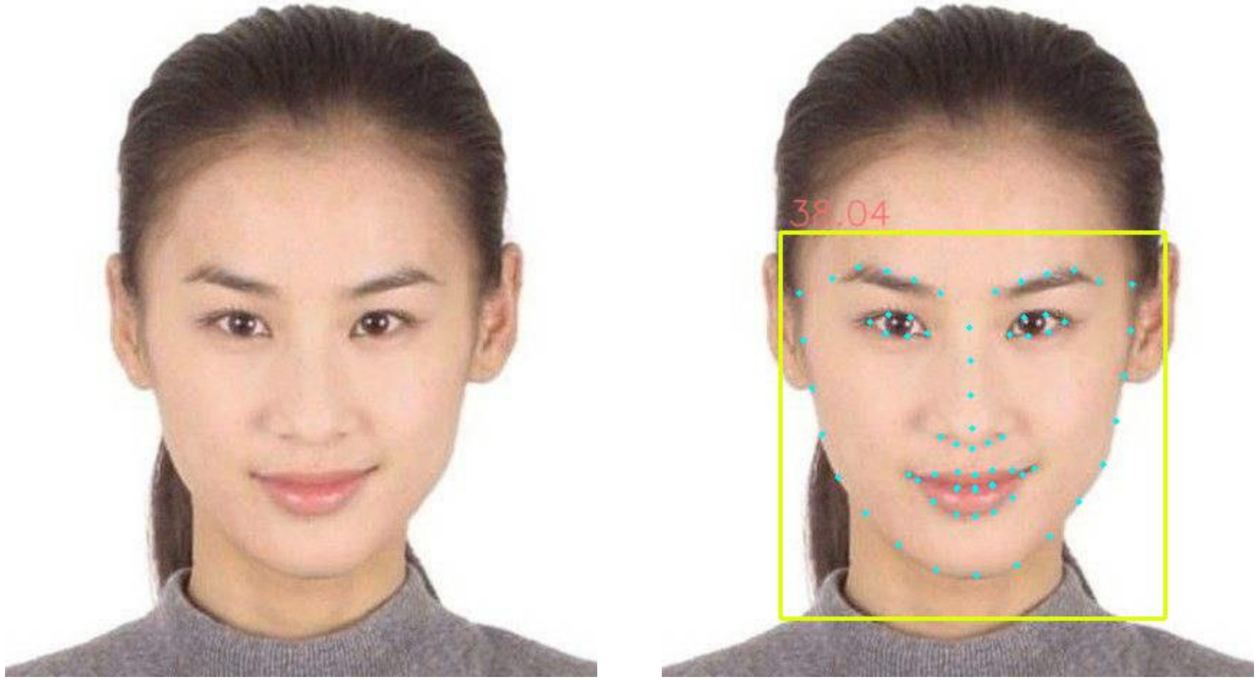
2 Research Achievements

Transferring Rich Deep Features for Facial Beauty Prediction

TABLE II: PREDICTOR PERFORMANCE COMPARISON

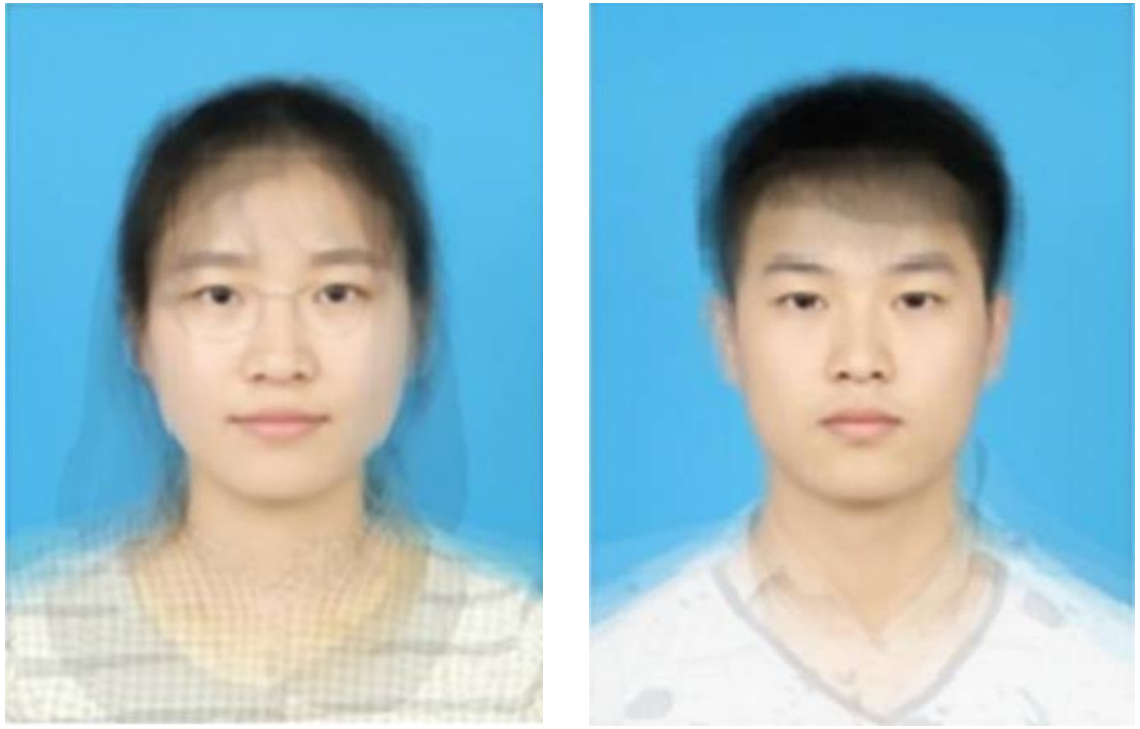


Method	RMSE	MAE	PC
Ours	**0.2786**	**0.3581**	**0.8399**
KeyPointGabor+PCA+SVR	0.5606	0.5541	0.5490
KeyPointGabor+PCA+Gaussian Reg	0.6152	0.4724	0.4591
UniSampleGabor+PCA+SVR	0.5452	0.423	0.5847
UniSampleGabor+PCA+Gaussian Reg	0.5164	0.3969	0.6347
Combined Features+SVR	0.5120	0.3961	0.6433
Combined Features+Gaussian Reg	0.5149	0.3931	0.6482
CNN-based	-	-	0.8187



2 Research Achievements

Average Face in COI of HZAU



Combining Adversarial Learning and Hierarchy Deep Feature Fusion for Visual Tracking

3

CVLH AI Cloud Platform

3 CVLH AI Cloud Platform

AI is the new electricity.
——Andrew Ng

3 CVLH AI Cloud Platform

AI can help business promote profit,
better understanding your customers,
entertainment apps,
precision agriculture,
...

But

How can everyone use AI?

No AI researchers

No GPU cluster

No adequate labeled data

No excellent programmers

3 CVLH AI Cloud Platform

V1.0.1_R

Computer Vision Lab of HZAU AI Cloud Platform

3 CVLH AI Cloud Platform

1 CV

2 NLP

3 BD

4 R

Computer Vision Module

TensorFlow™

NLP Module

Deep Learning for Java

Open-Source, Distributed, Deep Learning Library for the JVM

Big Data Module

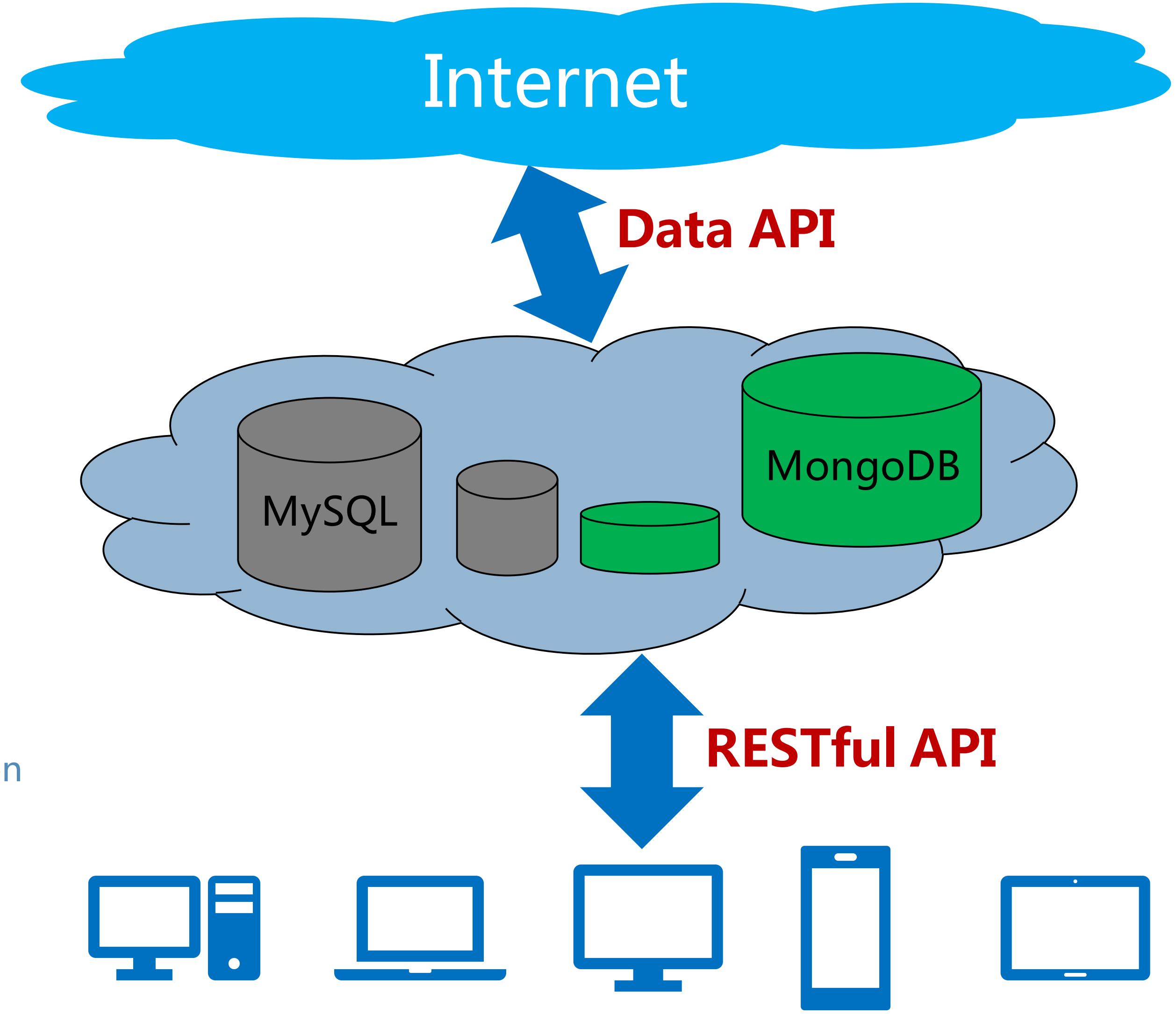
scikit learn

Research Module

PYTORCH

3 CVLH AI Cloud Platform

- CVLH-AI
  - CV
    - Image Classification
    - Face Detection
    - Face Compare
    - Facial Beauty Predict
  - NLP
    - Similarity Measure
    - Text Classification
    - Sentiment Analysis
    - Hot Words Extraction
  - BD
    - Web Spider
    - User Profile
    - Data Storage
    - HTML5-Based Data Visualization
  - R
    - Visual Tracking
    - Networks Architecture
    - Transfer Learning


Internet
Data API
MySQL
MongoDB
RESTful API

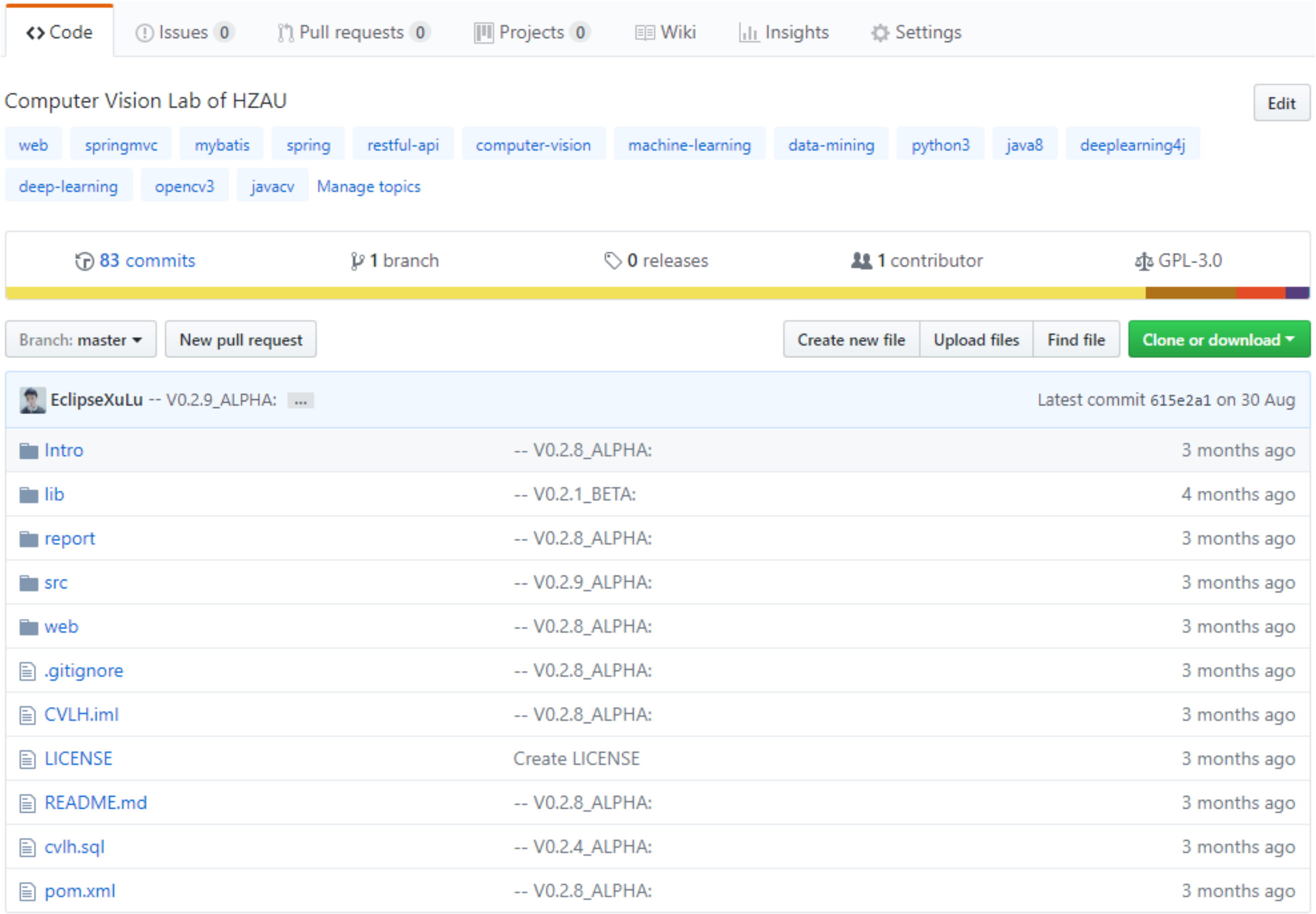
3

CVLH AI Cloud Platform

https://github.com/EclipseXuLu/CVLH.git

- Permanently Free for AI researchers
- Currently Free for commercial use
- Open Source available on github
- Under GPL3.0 LICENCE

3 CVLH AI Cloud Platform


Code
Issues 0
Pull requests 0
Projects 0
Wiki
Insights
Settings
Edit
Branch: master
New pull request
Create new file
Upload files
Find file
Clone or download

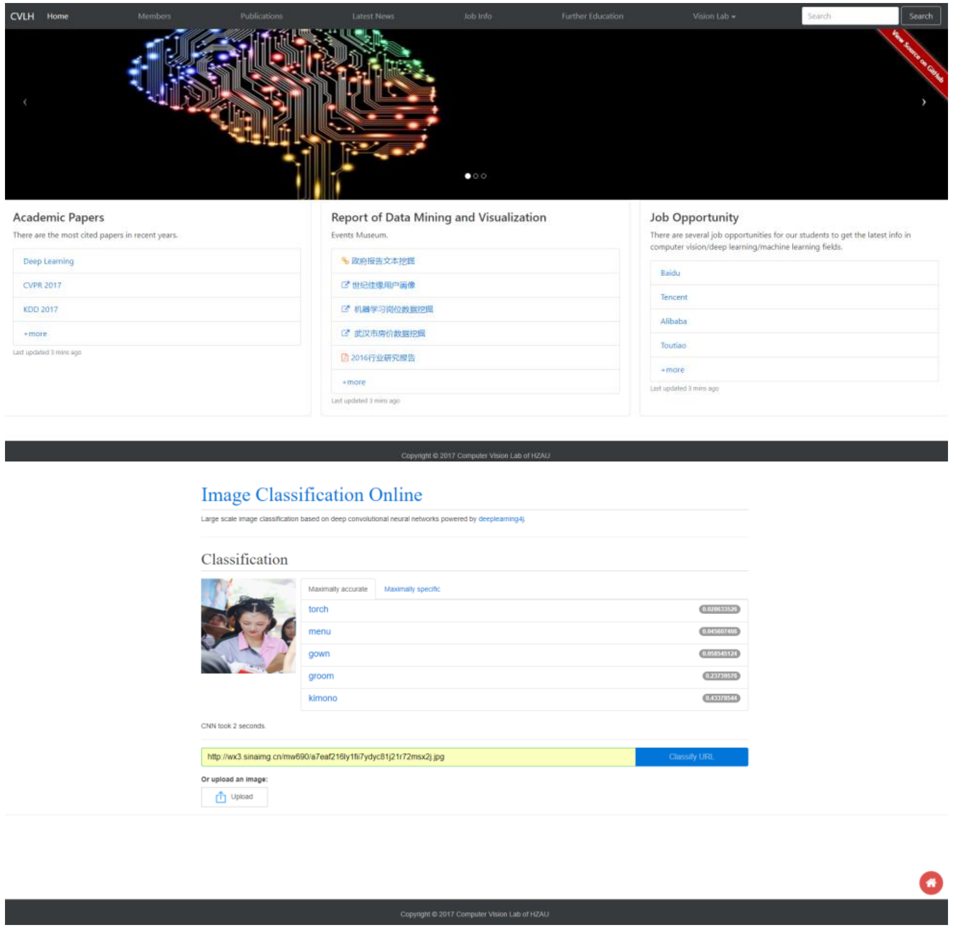
Computer Vision Lab of HZAU

web springmvc mybatis spring restful-api computer-vision machine-learning data-mining python3 java8 deeplearning4j deep-learning opencv3 javacv Manage topics

83 commits 1 branch 0 releases 1 contributor GPL-3.0

EclipseXuLu -- V0.2.9_ALPHA: … Latest commit 615e2a1 on 30 Aug

Intro	-- V0.2.8_ALPHA:	3 months ago
lib	-- V0.2.1_BETA:	4 months ago
report	-- V0.2.8_ALPHA:	3 months ago
src	-- V0.2.9_ALPHA:	3 months ago
web	-- V0.2.8_ALPHA:	3 months ago
.gitignore	-- V0.2.8_ALPHA:	3 months ago
CVLH.iml	-- V0.2.8_ALPHA:	3 months ago
LICENSE	Create LICENSE	3 months ago
README.md	-- V0.2.8_ALPHA:	3 months ago
cvlh.sql	-- V0.2.4_ALPHA:	3 months ago
pom.xml	-- V0.2.8_ALPHA:	3 months ago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Job Info
Further Education
Vision Lab
Search
Search
View Source on GitHub
Maximally accurate
Maximally specific
Classify URL
Upload

Academic Papers

There are the most cited papers in recent years.

- Deep Learning
- CVPR 2017
- KDD 2017
- +more

Last updated 3 mins ago

Report of Data Mining and Visualization

Events Museum.

- 政府报告文本挖掘
- 世纪佳缘用户画像
- 机器学习岗位数据挖掘
- 武汉市房价数据挖掘
- 2016行业研究报告
- +more

Last updated 3 mins ago

Job Opportunity

There are several job opportunities for our students to get the latest info in computer vision/deep learning/machine learning fields.

- Baidu
- Tencent
- Alibaba
- Toutiao
- +more

Last updated 3 mins ago

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Image Classification Online

Large scale image classification based on deep convolutional neural networks powered by deeplearning4j.

Classification

torch	0.028633526
menu	0.045607466
gown	0.058545124
groom	0.23739576
kimono	0.43378544

CNN took 2 seconds.

http://wx3.sinaimg.cn/mw690/a7eaf216ly1fii7ydyc81j21r72msx2j.jpg

Or upload an image:

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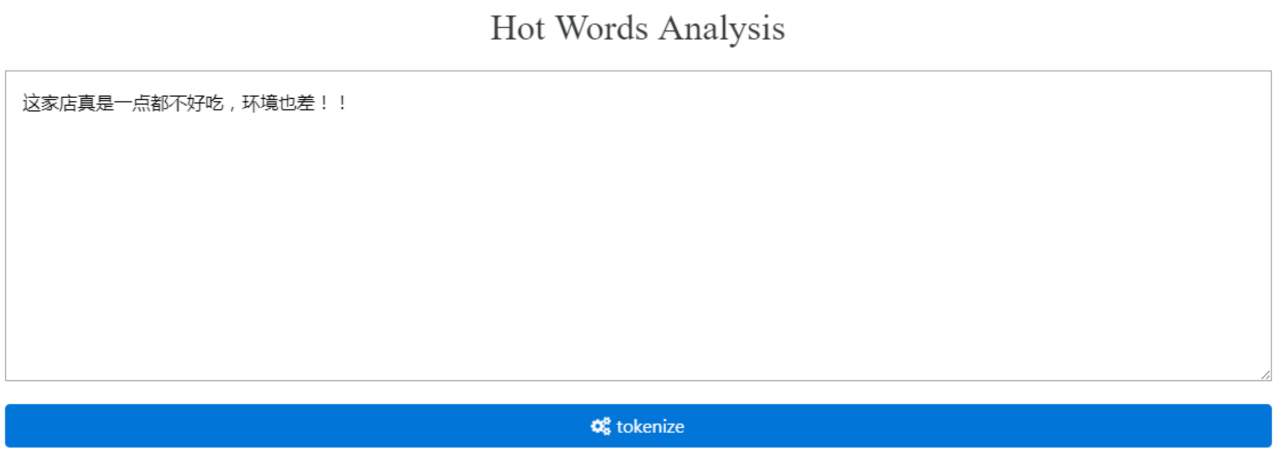
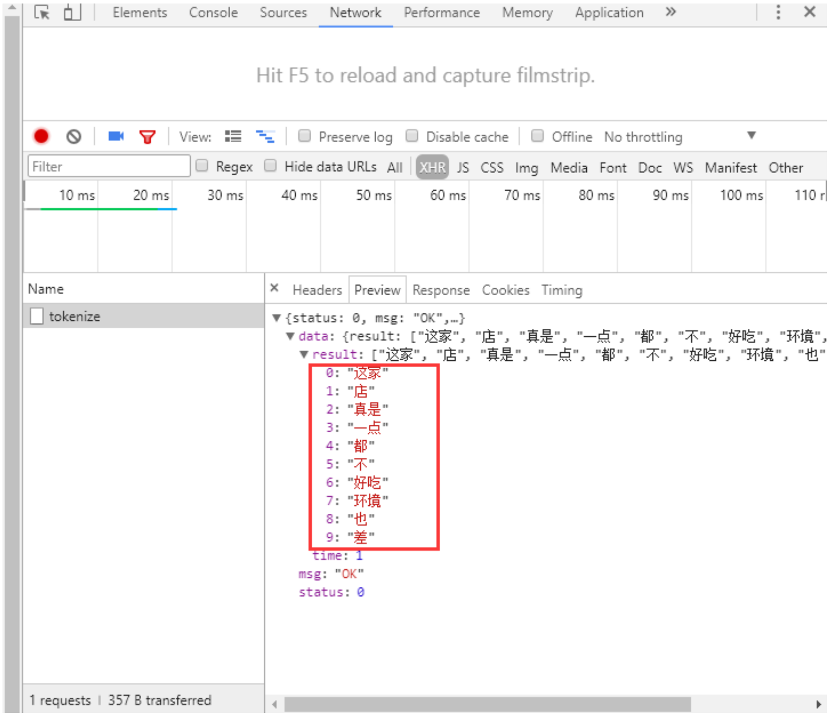
3

CVLH AI Cloud Platform



Hot Words Analysis

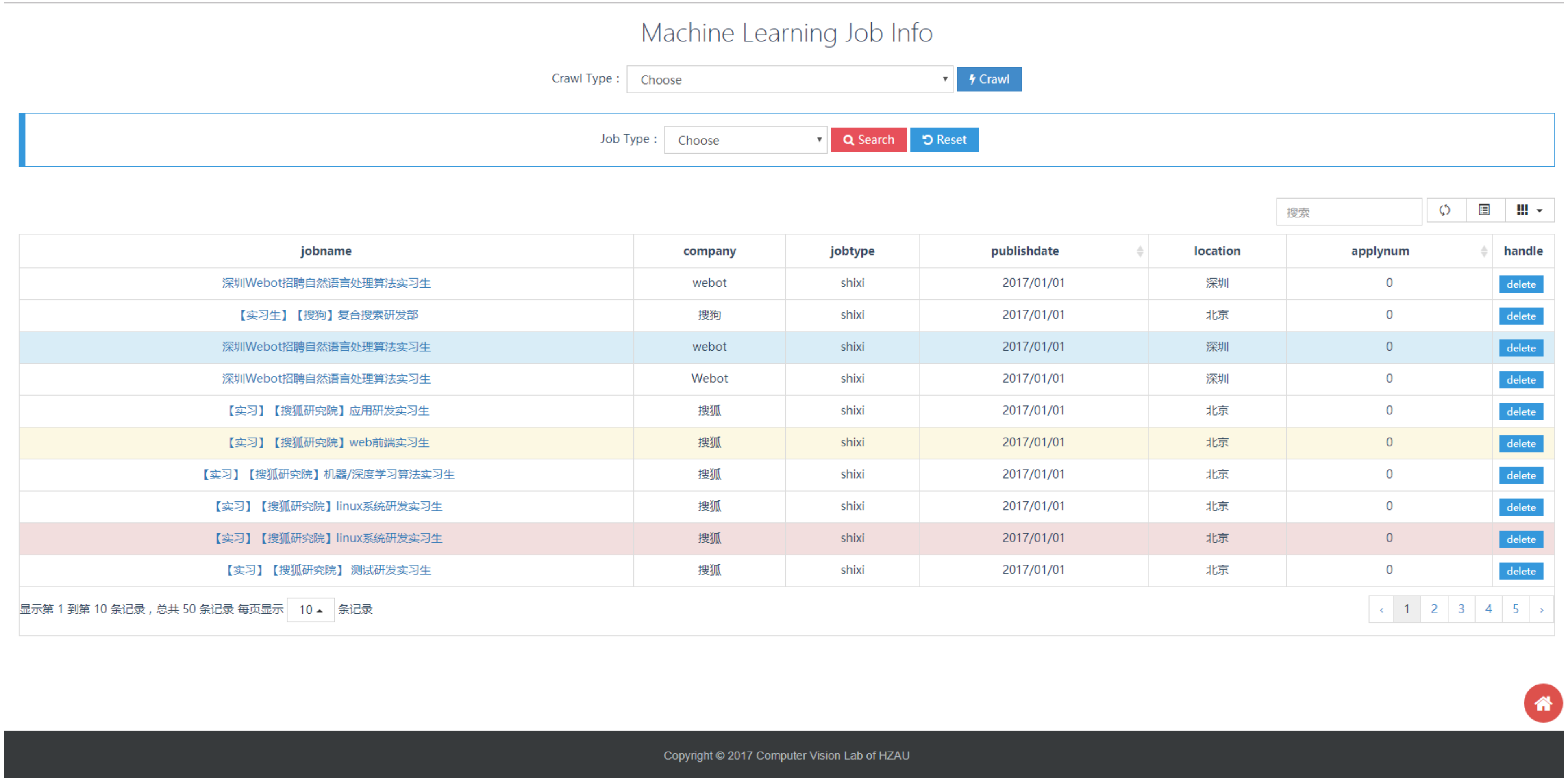
这家店真是一点都不好吃，环境也差！！



Elements
Console
Sources
Network
Performance
Memory
Application
Hit F5 to reload and capture filmstrip.
View:
Preserve log
Disable cache
Offline
No throttling
Filter
Regex
Hide data URLs
All
XHR
JS
CSS
Img
Media
Font
Doc
WS
Manifest
Other
10 ms
20 ms
30 ms
40 ms
50 ms
60 ms
70 ms
80 ms
90 ms
100 ms
110 r
Name
tokenize
Headers
Preview
Response
Cookies
Timing
1 requests | 357 B transferred

```
▼{status: 0, msg: "OK",…}
  ▼data: {result: ["这家", "店", "真是", "一点", "都", "不", "好吃", "环境",
    ▼result: ["这家", "店", "真是", "一点", "都", "不", "好吃", "环境", "也"
       0: "这家"
       1: "店"
       2: "真是"
       3: "一点"
       4: "都"
       5: "不"
       6: "好吃"
       7: "环境"
       8: "也"
       9: "差"
     time: 1
   msg: "OK"
   status: 0
```

CVLH AI Cloud Platform



Machine Learning Job Info

jobname	company	jobtype	publishdate	location	applynum	handle
深圳Webot招聘自然语言处理算法实习生	webot	shixi	2017/01/01	深圳	0	delete
【实习生】【搜狗】复合搜索研发部	搜狗	shixi	2017/01/01	北京	0	delete
深圳Webot招聘自然语言处理算法实习生	webot	shixi	2017/01/01	深圳	0	delete
深圳Webot招聘自然语言处理算法实习生	Webot	shixi	2017/01/01	深圳	0	delete
【实习】【搜狐研究院】应用研发实习生	搜狐	shixi	2017/01/01	北京	0	delete
【实习】【搜狐研究院】web前端实习生	搜狐	shixi	2017/01/01	北京	0	delete
【实习】【搜狐研究院】机器/深度学习算法实习生	搜狐	shixi	2017/01/01	北京	0	delete
【实习】【搜狐研究院】linux系统研发实习生	搜狐	shixi	2017/01/01	北京	0	delete
【实习】【搜狐研究院】linux系统研发实习生	搜狐	shixi	2017/01/01	北京	0	delete
【实习】【搜狐研究院】 测试研发实习生	搜狐	shixi	2017/01/01	北京	0	delete

显示第 1 到第 10 条记录，总共 50 条记录 每页显示 10 条记录

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How can CVLH-AI simplify your procedures?

Traditional Way to Build AI Services:

1. Recruiting AI researchers and computer programmers
2. Collecting lots of (labeled/unlabeled) (structured/unstructured) data
3. Hiring people to label the dataset
4. Buying servers and GPUs
5. Building models
6. Training ML models

Building AI Services with CVLH-AI:

1. Apply for CVLH-Key and CVLH-Secret
2. Integrate into your terminal

3 CVLH AI Cloud Platform

「Our Partner」

ZLF
武汉智丽丰信息科技有限公司
WU HAN ZHILIFENG INFORMATION TECHNOLOGY CO.,LTD

Face Compare API
Image Rec API
Data API

MS
觅思投资策略团队

Data API

GREEN PINE CAPITAL PARTNERS
松禾資本
松禾资本

Data API

CVLH AI Cloud Platform

API More than 120,000 calls

Data More than 15,000,000 records

4

Future Work

4 Future Work

- Design better deep neural networks architecture
- Improve performance of CVLH-AI Cloud Platform

Thanks

Speaker : Xu Lu

College of Informatics

Research fields: Machine Learning/Computer Vision/Data Mining