OPENALPR車牌辨識系統

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OUTLINE

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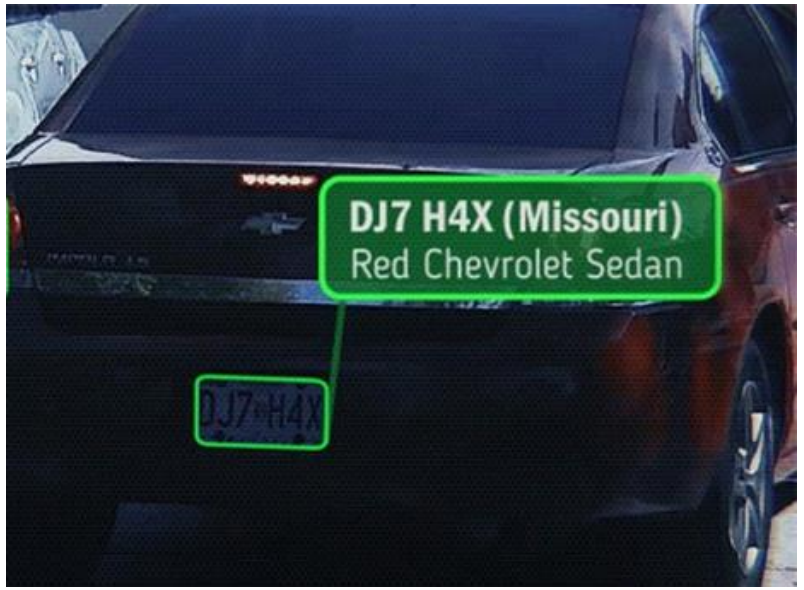
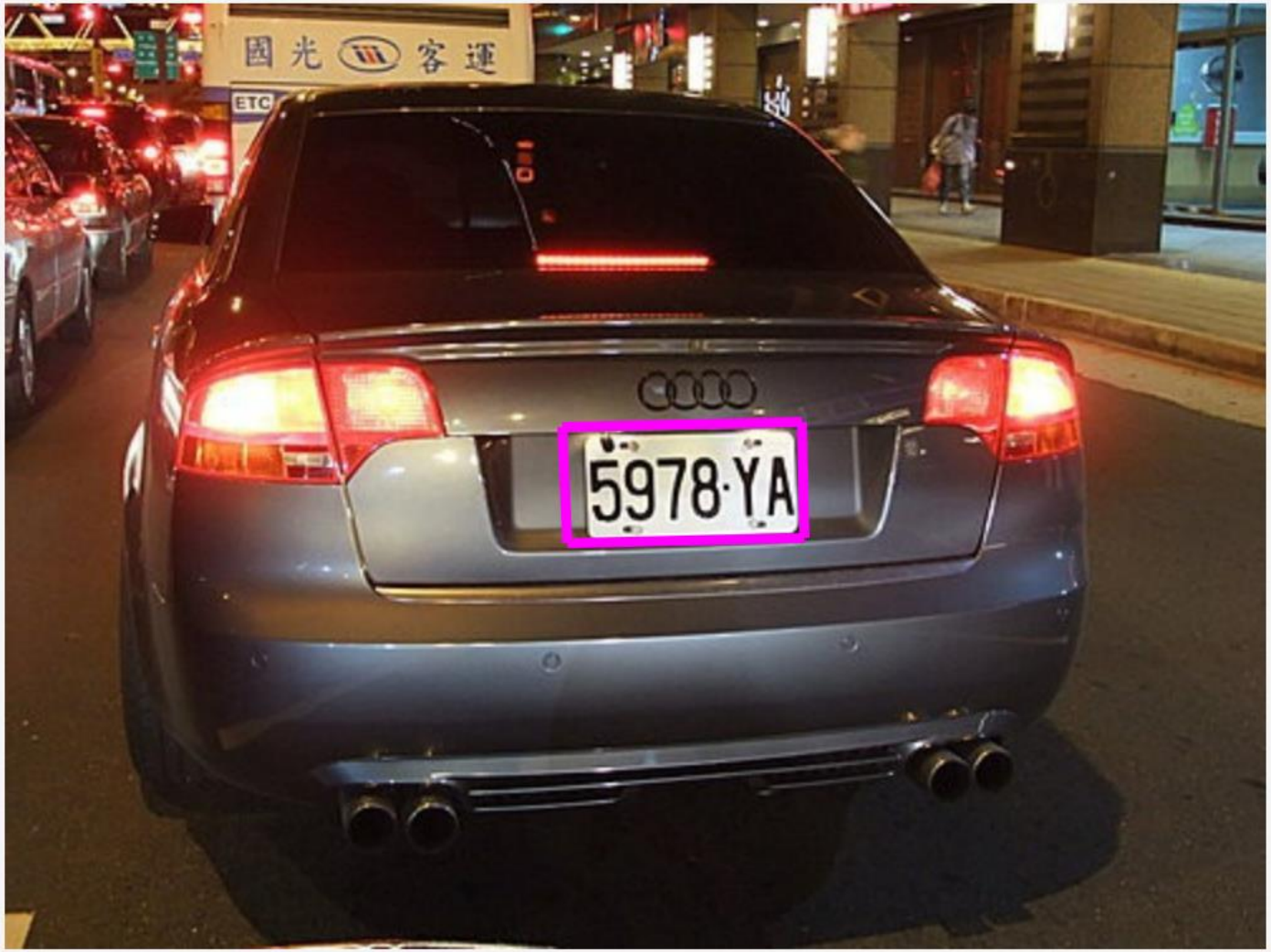
OPENALPR簡介

- OpenALPR is an open source Automatic License Plate Recognition
- The library written in C++ with bindings in C#, Java, Node.js, Go, and Python.
- The library analyzes images and video streams to identify license plates.
- The output is the text representation of any license plate characters.
- http://www.openalpr.com/cloud-api.html 線上測試版





License Plate
5978YA ir

Vehicle Color
Silver-Gray

Vehicle Make
Audi

Vehicle Make-Model
Audi A3

Vehicle Type
Sedan-Standard

Vehicle Orientation

安裝環境

- Raspberry Pi 3
- microSD 8/16 GB
- Linux
- 確認套裝軟體更新到最新版本
  - sudo apt-get update
  - sudo apt-get upgrade

安裝編譯工具/函式庫

- apt-get install autoconf automake libtool apt-get install libleptonica-dev
- apt-get install libicu-dev libpango1.0-dev libcairo2-dev
- apt-get install cmake git libgtk2.0-dev pkg-config libavcodec-dev libavformat-dev libswscale-dev
- apt-get install python-dev python-numpy libjpeg-dev libpng-dev libtiff-dev libjasper-dev libdc1394-22-dev
- apt-get install virtualenvwrapper apt-get install liblog4cplus-dev
- apt-get install libcurl4-openssl-dev

工具安裝

1. Install Leptonica

   wget http://www.leptonica.org/source/leptonica-1.74.tar.gz

2. Install Tesseract OCR

   git clone https://github.com/tesseract-ocr/tesseract.git

3. Install OpenCV

   wget https://github.com/opencv/opencv/archive/2.4.13.zip

4. Install OpenALPR

   git clone https://github.com/openalpr/openalpr.git

LEPTONICA-1.74

- Leptonica 是一個開源的影像處理和圖像分析函式庫，主要包括的操作有：點陣圖操作、仿射變換、形態學操作、連通區域填滿、圖像變換及圖元掩模、融合、增強、算數運算等操作。
- 編譯 Leptonica需要：
  - apt-get install libjpeg-dev libtiff5-dev libpng12-dev gcc make
- Then run ./autogen.sh ./configure and make

TESSERACT OCR

- Tesseract，一款由 HP 實驗室開發，由 Google 維護的開源 OCR（Optical Character Recognition，光學字元辨識）引擎，可以不斷的訓練圖庫，使圖像辨識不斷增強；如果團隊深度需要，還可以以它為基底，開發出符合自身需求的 OCR 引擎。
- 編譯 Tesseract需要：
  - apt-get install ca-certificates git autoconf automake libtool autoconf-archive pkg-config libicu-dev libpango1.0-dev libcairo2-dev
- Then run ./configure and make

OPENCV

- OpenCV 的全稱是 Open Source Computer Vision Library，是一個跨平臺的電腦視覺庫。OpenCV 是由英特爾公司發起並參與開發，以 BSD 許可證授權發行，可以在商業和研究領域中免費使用。OpenCV 可用於開發即時的影像處理、電腦視覺以及模式識別程式。該程式庫也可以使用英特爾公司的IPP 進行加速處理。

OPENALPR

- mkdir openalpr/src/build
- cd openalpr/src/build
- cmake -DCMAKE_INSTALL_PREFIX:PATH=/usr \
  -DCMAKE_INSTALL_SYSCONFDIR:PATH=/etc ..
- make
- make install

PROBLEM(1/2)

missing "server" at JVM

- export JAVA_HOME=/usr/lib/jvm/java-1.7.0-openjdk-amdhf/
- cmake -D CMAKE_BUILD_TYPE=RELEASE \
  -D CMAKE_INSTALL_PREFIX=/usr/local \
  -D BUILD_SHARED_LIBS=OFF

PROBLEM (2/2)

line 164 : string is not a type

- vim /usr/local/include/tesseract/unichar.h **find line164**
- static string UTF32ToUTF8(const std::vector<char32>& str32);

- static std::string UTF32ToUTF8(const std::vector<char32>& str32);

測試

```
root@raspberrypi:/usr/local/src# alpr ea7the.jpg
plate0: 10 results
    - EA7THE      confidence: 91.0578
    - EA7TBE      confidence: 84.133
    - EA7T8E      confidence: 83.0083
    - EA7TRE      confidence: 82.7869
    - EA7TE      confidence: 82.5961
    - EA7TME      confidence: 80.2908
    - EA7TH6      confidence: 77.0045
    - EA7THB      confidence: 75.5779
    - EA7TH      confidence: 74.6576
    - EA7TB6      confidence: 70.0797
```

REFERENCE

- https://blog.vinczejanos.info/2016/08/31/install-openalpr-on-raspberry-pi-3/
- https://www.wandianshenme.com/play/install-openalpr-in-raspberry-pi-build-car-license-check-tool/
- https://github.com/openalpr/openalprOpenCVhttp://atceiling.blogspot.tw/2017/02/raspberry-pi-opencv.htmlOpenCV3
- https://www.pyimagesearch.com/2016/04/18/install-guide-raspberry-pi-3-raspbian-jessie-opencv-3/
- https://github.com/opencv/opencv/issues/6517
- https://stackoverflow.com/questions/44551961/elasticsearch-installation-error-missing-server-jvm-at-jvm-dll