

# BO, HAOHAN

E-mail: haohan.bo[at]mail.mcgill.ca

## Education

**McGill University** (Montreal, QC, Canada), **MS Computer Science** 2017.09 -- Now

Fellowship: Mitacs Globalink Fellowship

**Wuhan University** (Wuhan, Hubei, China), **BS Software Engineering** 2013.09 -- 2017.06

GPA : **3.76/4.0** (Major: **3.8/4.0** ), AVERAGE: **89** (Major: **89.5** ), RANK: **3.5%**

Scholarship: First Class Scholarship of Wuhan University (Top 5%)

Second Class Scholarship of Wuhan University (Top 10%)

Awards: Merit Student of Wuhan University

*First Prize* , 2014 Festival of Software Culture in Central China

## Internship Experience

Research Intern , **SenseTime Group Limited** 2016.10 -- 2017.04

*Intelligent Review of Images using Deep Convolutional Neural Network*

Supervisor: **Zhanghui Kuang**

This project aims to review images and evaluate whether they are legal using Deep Convolutional Neural Network, such as improved GoogleNet and Residual Network, with millions of training images ("http://master.sensetime.com/main/demo/np").

- >> Used improved Convolutional Pose Machines to generate ROIs and heatmaps of images.
- >> Designed the attention and ROI based Neural Network for classification.
- >> Trained the Neural Network using Caffe based on cost-sensitive strategy.
- >> Achieved an accuracy of approximately 99% if we classify them only into two classes, namely, legal and illegal; achieved an accuracy of approximately 93% for four classes.

Research Assistant , **University of Waterloo** 2016.07 -- 2016.10

*Programming and Testing Google Glass/Google Tango/Android Innovative Applications*

Supervisor: **Shi Cao**

This application aims to remove objects that we do not want to show in reality and add new virtual objects through augmented reality and machine learning based on Google Tangle Tablet and Unity 3D.

- >> Implemented the remove-algorithm based on the PointCloud provided by Google Tango.
- >> Added new virtual objects through the three-dimensional position in the PointCloud

## Research & Project Experience

**Laboratory of Bioinformation, Wuhan University**

Core Memeber , *Recognition of Relationships of Genes Using Deep Learning*

2015.10 -- 2016.07

This project is designed to use deep learning method to recognize the relationships between genes based on the sentences in open access database.

- >> Developed web spiders to crawl data that comprise sentences containing genes from biology papers in the Open Access Database using web spiders.
- >> Used a few Natural Language Processing Tools of Python, such as NLTK and genism, to tokenize sentences and convert tokens into word vectors based on the model of Word2Vec.
- >> Designed the structure of our Convolutional Neural Network and trained it using TensorFlow.
- >> Evaluated our model and achieved an accuracy of 85.2% on the gene relationship data set and 98.4% on the TREC question type dataset.

### Core Member , Intelligent Crawler of Web

2015-06 -- 2016.07

This project aims to implement an intelligent web crawler framework based on Scrapy with bandwidth allocation.

- >> Designed the architecture of our crawler and implemented a dozen crawlers of website based on the packages of Python, such as Requests, Scrapy, and BeautifulSoup
- >> Developed tools to clean data through SVM, Naive Bayes, and Convolutional Neural Network based on NLTK, Scikit Learn, and Tensorflow; achieved an accuracy of 86%

### Personal Project , CAPTCHA Recognition Extension of Chrome

2015.09 -- 2015.09

This extension is designed to recognize CAPTCHA of the educational administration management system website.

- >> Preprocessed all the images using OpenCV and Python Image Library based on erosion.
- >> Obtained CAPTCHA from the front end using HTML5 and Javascript via AJAX, as well as used Django on the back end of my project to respond to requests.
- >> Designed the Convolutional Neural Network based on VGG and improved it using batch normalization; achieved an accuracy of 97%.
- >> Implemented the functions related to the calculation of GPA and average of selected courses.

### Group Leader of Web Front-End , Ziqiang.studio

2013.09 -- 2015.05

Ziqiang Studio is a type of Internet organization, which is managed by students and aims to produce excellent products that serve both students and teachers.

- >> Implemented the front-end of websites, such as the like landing page ("mobile.ziqiang.net.cn"), introduction page, and vote page ("topten.ziqiang.net.cn"), among others, using HTML5, CSS3, and jQuery.
- >> Managed all the projects of the group of front-end.

## **Skills**

<b>Programming Languages:</b>	Python, Java, C++, JavaScript, C#, MATLAB
<b>Familiar Frameworks:</b>	Caffe, Tensorflow, Unity 3D, Scrapy
<b>Other:</b>	HTML5, CSS3, Git, Linux

## **Extra Curricular Activities**

<b>Hackday, Programming Marathon in Central China</b>	<b>//</b>	<b>2014.05</b>
---	-----------	----------------

- >> Implemented (within 24 hours) an extension of Chrome that aims to prevent people from substantially indulging in online shopping.