

# YUWEI (VICTORIA) QIU

Tsinghua University, P.R. China

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## EDUCATION

### Tsinghua University

Department of Electronic Engineering

- Senior undergraduate, GPA: 88/100

Beijing, China

Aug. 2014 – Jun. 2018 (Expected)

### University of Pennsylvania

GRASP Laboratory, Department of Computer and Information Sciences

- Undergraduate Visiting Research Assistant to *Prof. Jianbo Shi*

Philadelphia, PA

Summer 2017

## SKILLS

### Computer Skills

- Proficient (>2years) C/C++, Matlab
- Familiar (~1year) Python, C#, Latex, Git, Verilog, MIPS Assembly Language, HTML, UNIX
- Deep Learning Tools Caffe, Tensorflow, Pytorch

### English Proficiency

- TOEFL 108 = **26 (Speaking)** + 28 (Reading) + 27 (Writing) + 27 (Listening)
- GRE 321 = **154 (Verbal)** + 167 (Quantitative) + 3.5 (Writing)

### Featured Courses

- Robotics: Perception (Coursera), Digital Image Processing (A+), Computer Graphics (A+), Media & Recognition (A)
- Advanced Matlab Programming (A+), C/C++ Computer Program Design (A), Data structure & Algorithm Design (A)

## PUBLICATIONS

- [1] **Yuwei Qiu**, Huimin Ma, and Lei Gao.  
“**Hardness Predictions for Object Detection Inspired by Human Vision**”  
*9<sup>th</sup> International Conference of Image Graphics (ICIG 2017)*. Accepted as **oral presentation** (~18%).
- [2] Lei Gao, Huimin Ma, Chenhao Liu, and **Yuwei Qiu**.  
“**A Human Visual Bionic Framework for Object Recognition**”  
Scheduled to be published in the *Journal of Graphics, China*.

## WORK EXPERIENCE

### Microsoft Research, Asia

Internship Researcher, Natural Language Processing Group

Beijing, China

11. 2017 - Present

## RESEARCH EXPERIENCE

### University of Pennsylvania

General Robotics, Automation, Sensing & Perception (GRASP) Laboratory

Research Assistant to *Prof. Jianbo Shi*

#### (a) On-going: Skeleton Body Pose Prediction Based On First Person Videos

07. 2017 – Present

- Three-dimensional-reconstructed context from highly-jittery, blurry, and narrow ego-centric frames with Multi-View Stereo.
- Tracked joints with LSTM in first-person point-of-view videos to estimate and predict skeleton body pose of camera-holder.
- Experimented with real cases, including ego-centric cooking and basketball game videos, showing real-time location and skeleton body pose of camera-holder in three-dimensional context.

### Tsinghua University

3D Image Simulation Laboratory

Research Assistant to *Prof. Huimin Ma* (Deputy Secretary-General of China Graphics Society)

#### (b) Hardness Prediction for Object Detection inspired by Human Vision

08. 2016 – 2017.01

- Introduced human factors into object detection to predict the detection hardness.
- Defined novel eye-tracking features and eye-tracking complexity to quantify complicated human visual process.
- Computed eye-tracking complexity directly with a CNN in spite of laborious eye-tracking experiments.
- Predicted object-detection failures in *ILSVRC* with a precision of 0.94.
- Contributed to a **first-authored paper**, which has been accepted as **oral presentation** in *ICIG 2017*.

- (c) **On-going: Characterizing Psychological Problems via Interactive Devices** 03. 2017 – Present
- Recognized patterns of mental diseases, in behavioral and biometric data from interactive devices.
  - Now analyzed data collected from psychology experiments and diseases institutes, experimented ML methods.
  - To improve or testify diagnosis of mental sickness with data support.

**Tsinghua University**

Beijing, China

*Intellectual Graphs and Texts Processing Laboratory*

Research Assistant to **Prof. Shengjin Wang**

- (d) **End-to-End Printed Chinese Text Recognition Based on CNN** 12. 2016 – 2017.06

- Designed an end-to-end framework for Chinese printed text recognition.
- Constructed a THU Chinese-printed character database (the THU Chinese Database) containing 3500+ categories of Chinese characters for both off-line training and validation.
- Trained a multi-pathway convolutional neural network, achieved a prevision of 96.8% on CMCC Chinese Database.
- Proposed solution was **purchased by China Mobile**.

**Stanford University**

Palo Alto, CA

*Department of Electrical Engineering*

Participants in a remote project of **Prof. Tsachy Weissman**

- (e) **Magnetic Resonance Imaging (MRI) Registration** 10. 2016 – 2016.12

- Improved MRI registration results by solving problems with information theory and statistical signal processing.
- Experimented with Maximum Likelihood Estimation approach, a mutual information based registration method.
- Applied a bias-corrected version of MLE estimator in smooth regime, reducing the Mean Square Error to 1% of traditional MLE approach.
- Complete a technique report and demo. Ranked **4<sup>th</sup> out of 146** participants.

## PROJECT EXPERIENCE

### Facial Expression Recognition

Spring 2017

*Course project in "Media and Recognition"*

- Classified static images into eight categories of emotion, including anger, happiness, surprise and fear etc.
- Used VGG-16, multistage fine-tuning on various datasets including VGG-Face dataset, FER2013 public Test, FER2013 private Test and CK+.
- Selected to give a presentation and ranked the **1<sup>st</sup> out of 10** teams.

### 3-D vector text construction and texture mapping

Spring 2016

*Course project in "Computer Graphics"*

- Constructed three-dimensional Chinese characters using texture mapping with natural scene images.
- Used high-dimensional Bézier curves and B-splines to contour the characters.
- Projected static images onto surfaces of three-dimensional characters using homography.
- Ranked **1<sup>st</sup> out of 40** students.

### Image Searching

Summer 2015

*Supervised by Prof. Yongdong Zhang (Chinese Academy of Science, Institute of Computing Technology)*

- Searched for most similarities using features extracted from input static images.
- Used traditional searching techniques for local-sensitive hashing.
- Tested the demo on a test-set based on **PASCAL VOC** and attained an accuracy of 90%.

## AWARDS AND HONORS

- Hong Qian Comprehensive Scholarship 2017
- Tsinghua Annual Undergraduate Scholarship for Outstanding Academic, Art and Social Performances  
Three times in 2015, 2016, 2017
- Outstanding Research Assistant (Stanford EE, remote project) 2015
- Outstanding Team Captain Award, **First Prize** for Business Design and Corporation Operation (Global Leadership Competition)  
Intel, Silicon Valley, 2015

## EXTRACURRICULAR ACTIVITIES

### Development for Live Broadcasting of 2017 Anniversary Celebration

*Team Leader*

- Built a website for live broadcasting with millions of viewers, which no previous staffers have achieved.
- Successfully streamed a live broadcast for **5 hours with over 5000 clicks**.

### EE Student Union @Tsinghua, EE

*President of External Communication*

- Within one year, raised nearly USD 20,000 for financial sponsorship.

*Hosts of forums for EE, CS or ECE director of Duke, University of Pennsylvania and Columbia University*