

# YUWEI (VICTORIA) QIU

Tsinghua University, P.R. China

Homepage: <https://victoriaqiu.github.io/>

Email: [qyw14@mails.tsinghua.edu.cn](mailto:qyw14@mails.tsinghua.edu.cn) | [vic\\_thustudy@126.com](mailto:vic_thustudy@126.com)

## EDUCATION

### Tsinghua University

Beijing, China

Department of Electronic Engineering

Aug. 2014 – Jun. 2018 (Expected)

- Senior undergraduate, GPA: 88/100

#### Featured Courses

- Digital Image Processing (**top 1 in 90**); Computer Graphics (**top 1 in 40**); Production Practice Training (**top 5 in 262**); Student Research Training Project (**top 10 in 500**); Advanced Matlab Programming (**top 10 in 262**); C/C++ Computer Program Design (**top 10 in 262**); Media & Recognition (a Machine Learning course) (**top 10 in 233**)

### University of Pennsylvania

Philadelphia, PA

GRASP Laboratory, Department of Computer and Information Sciences

Summer 2017

- Undergraduate Visiting Research Assistant to *Prof. Jianbo Shi*
- Person of the Year award (**top 20 out of 3300 students**)

## 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 Image and Graphic*.

## SELECTED HONORS AND AWARDS

- Hong Qian Comprehensive Scholarship (**top 15 out of 262 Tsinghua students**, awarded for outstanding academic performance and extracurricular achievement)
- **Three times** Annual Scholarship for Outstanding Academic, Art and Social Performances (**top 15 out of 262**)
- Outstanding Research Assistant awarded by **Stanford EE** (**top 4 out of 146 international students**)
- Outstanding Team Captain (**top 1 out of 1200+ international students**), First prize for Global Leadership Competition by **Intel, Silicon Valley** (**top 1 out of 126 teams**)
- Person of the Year 2017 awarded by Tsinghua Overseas Research Program (**top 20 out of 3300 students**)

## RESEARCH EXPERIENCE

### University of Pennsylvania

Philadelphia, PA

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

- Expect to construct a multimedia three-dimensional model of highly-jittery, blurry, and narrow ego-centric sequences of team activities.
- Three-dimensional-reconstructed background information with Structure from Motion, Multi-View Stereotype and Bundle Adjustment.
- Jointly trained joint-tracking CNN with LSTM to estimate and predict skeleton body pose of camera-holder, utilizing temporal third-person information captured from team members as weak supervised information.
- Applied proposed framework to ego-centric videos of real cases, like cooking and basketball, showing camera holder's location and skeleton body pose in three-dimensional context. Still experimenting with audio track.

### Tsinghua University

Beijing, China

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

- Predicted the performance of object detection algorithms by finding regular patterns of eye tracking data.
- Fused novel eye tracking features into CNN to utilize complicated human visual traits.
- Extracted eye tracking features directly with a jointly trained CNN in spite of laborious eye tracking experiments.
- Predicted object detection failures in *ILSVRC* with a precision of 94.3%.
- 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

09. 2017 – Present

- Expect to recognize patterns of mental diseases, in behavioral and biometric data from interactive devices.
- Now analyzing data collected from psychology experiments and diseases institutes equipped with ML/DL 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 Neural Networks

12. 2016 – 2017.06

- Designed an end-to-end framework utilizing joint-trained neural networks for Chinese printed text recognition.
- Constructed a THU Chinese-printed character database (the THU Chinese Database) containing 3500+ categories of Chinese characters for off-line training and validation.
- Utilized semantic information through a Conditional Random Field model.
- 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.
- Completed a technique report and demo and ranked **4<sup>th</sup> out of 146** participants.

## Tsinghua University

Beijing, China

Course project in "Media and Recognition"

### (f) Facial Expression Recognition

Spring 2017

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

Course project in "Computer Graphics"

### (g) 3-D vector text construction and texture mapping

Spring 2016

- 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.

## WORK EXPERIENCE

### Huawei Research Beijing

Beijing, China

Vision Researcher, Artificial Intelligence Group

11. 2017 – Present

- World's Top Five Hundred Corporation.
- Applied vision algorithms like text recognition and face tracking approaches to flexible machines.
- Part of the results will be deployed in real products.

## SKILLS

### Professional Computer Skills

- **Excellent in** C/C++, Matlab, Caffe, Python, C#, Tensorflow, Pytorch, HTML, OpenCV, OpenGL.

### Languages

- **Excellent in** Mandarin (mother tongue).
- **Proficient in** English (TOEFL iBT 108/120; latest Speaking score 28).
- **Basic Communication skills in** Japanese and French.

## 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 famous professors from Ivy League

- Delivered interviews with famous professors from Duke University, University of Pennsylvania, University of Michigan and Columbia University.