Yuwei (Victoria) Qiu

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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"
9th 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

- Person of the Year 2017 Comprehensive Award ***(top 20 out of 3300 students***) 2017
- Hong Qian Comprehensive Scholarship ***(top 15 out of 262 Tsinghua students)*** 2017
- ***Three times*** Annual Scholarship for Outstanding Academic, Art and Social Performances ***(top 15 out of 262)*** 2015 – 2017
- Outstanding Research Assistant by ***Stanford EE (top 4 out of 146 international students)*** 2015
- 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)*** 2015

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 **4th 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 **1st 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 **1st 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.