Yuwei (Victoria) Qiu

Tsinghua University, P.R. China
Email: qyw14@mails.tsinghua.edu.cn | vic_thustudy@126.com

Education

Tsinghua University *Beijing, China*
Department of Electronic Engineering Aug. 2014 – Jun. 2018 (Expected)
- Senior undergraduate, GPA: 88/100

University of Pennsylvania *Philadelphia, PA*
GRASP Laboratory, Department of Computer and Information Science Summer 2017
- Undergraduate Visiting Research Assistant in ***Prof. Jianbo Shi*** 's Group

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 and Recognition(A)
- Advanced Matlab Programming(A+), C/C++ Computer Program Design(A), Data structure and Algorithm Design(A)

Publications

[1] **Yuwei Qiu**, Huimin Ma, and Lei Gao.
"Hardness Prediction for Object Detection inspired by Human Vision"
In the 9^{th} *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"
To appear in *Journal of Graphics, China*.

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

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
- Introduced human factor 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 an 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 THU Chinese printed character database (THU Chinese Database), containing 3500+ categories of Chinese characters for both offline 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 via connecting the problem to 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 **4th 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 **1st out of 10** teams.

3-D vector text construction and texture mapping Spring 2016

Course project in "Computer Graphics"

- Three-dimensional-constructed Chinese characters, 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 the **1st out of 40** students.

Image Searching Summer 2015

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

- Searched with features extracted from input static images for the most similarities.
- Used traditional searching technique local-sensitive hashing.
- Tested the demo on a testset 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 (Global Leadership Competition)
- **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 up a website for live broadcasting with millions of audiences, which none of previous staff have ever achieved.
- Successfully live broadcasting for ***5 hours with over 5000 clicks***.

EE Student Union @Tsinghua, EE

President in charge 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

- Deliver a brief conversation, interpret and explain towards audience.