Yuwei (Victoria) Qiu

Tsinghua University, P.R. China
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Education

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

University of Pennsyvania *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(Quantitive) + 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 Vsion"
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 Pennsyvania *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 86.8% on THU 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.
- Extracted multiple features including SIFT, HOG, LBP and LPQ, and adopted SVM as classifier.
- 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, Institue 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

- **Three times** Tsinghua Annual Undergraduate Scholarship 2015,2016,2017
- **Outstanding Research Assistant** (Stanford EE, remote project) 2015

Extracurricular Activities

Development for Live Broadcasting of 2017 Anniversary Celebration

Team Leader

- Built up a website for live broadcasting with millions of audience, which none of previous staff have ever achieved
- Successfully live broadcasting for ***5 hours with over 5000 clicks***

EE Student Union @Tsinghua, EE

Chairman in charge of External Communication

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

Global Leadership Competition 2015

Team Captain

- Outstanding Team Captain Award
- Won the business design competition (the 1st place), held at Intel, Silicon Valley

裘雨薇

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教育背景

清华大学 中国北京
电子工程，学士在读 2014 年 9 月 – 2018 年 7 月

- GPA: 88/100
- **相关课程**
  - **研究性课程:** 数字图像处理（95/100），计算机图形学（95/100), 大学本科生科研训练基础(95/100)，大学本科生科研训练提高（95/100)，生产实习（95/100)
  - **编程类课程:** 高级 Matlab 编程与应用（95/100), 计算机 C/C++语言编程与应用（94/100)

论文发表

[1] **Yuwei Qiu**, Huimin Ma and Lei Gao. "Hardness Prediction for Object Detection Inspired by Human Vision." Submitted to ***ICIG 2017*, oral presentation(~8.38%)**
[2] 高磊，刘辰昊，裘雨薇，马惠敏。《TUOD 遮挡图像库的设计与实现》，***Journal of Graphics***

研究经历

宾夕法尼亚大学（计算机科学与信息系，GRASP Laboratory) Philadelphia, PA, USA
助理研究员，Prof. Jianbo Shi 2017 年 6 月 至今
（进行中）：基于第一视觉视频分析的人体姿态建模

- 建立总时长 10 小时的第一视觉视频图像库
- 高帧率第一视觉视频分析，自然背景场景下的像素级人体部位切割
- 基于深度学习网络 LSTM 的人体姿态估计
- 复杂信息自然场景的三维重建
- 生成人体姿态与动作的结果视频
- 目前拟投 CVPR2018 一作文章一篇

清华大学（电子工程系） 中国北京
助理研究员，马慧敏副教授（中国图像学学会副理事长）
项目一： 人类视觉系统与人类认知系统的深度学习建模 2016 年 7 月 – 2017 年 2 月

- 基于大规模心理学眼动实验（1280 人次），定义基于人类视觉系统的人类视觉特征
- 定义“人类视觉复杂度（eye tracking complexity）”，基于此成功预警全球大型物体检测竞赛（如 ILSVRC2016 等）中检测失败的类别
- **发表一篇一作 ICIG2017 会议论文，并进行口头报告（oral rate ~ 8.38%）**

项目二（进行中）：基于人机交互数据的心理学缺陷识别 2016 年 11 月 至今

- 成立交叉学科（心理学、生物、语言学）课题组，并担任**项目负责人**
- 独立设计并实施针对躁狂、自闭、抑郁症患者的生物指标采集（达 5000 人），提取基因特征、脑电特征
- 目前正在进行数据分析与建模，**拟投 nature/science sci 论文一篇**

清华大学（电子工程系） 中国北京
助理研究员，王生进教授 2016 年 12 月 至今
基于深度学习的点对点自然场景文本行识别

- 建立大型中文字符手写体\打印体图像库（100,000 张）
- 设计全自动分割标记算法以用于深度网络训练
- 建立端到端自然场景文本行检测、跟踪、识别系统，由**中国移动收购**，将于 2019 年使用

斯坦福大学（电子工程系） Palo Alto, CA, USA

助理研究员，Prof. Tsachy Weissman 2016 年 1 月 – 2016 年 2 月

基于互信息最大似然算法的改进医疗图像配准方法

- 设计互信息算子，改进算子性能，用于医疗图像配准
- 独立完成全部任务，撰写研究报告和 demo，排名 4/246
- **获 Stanford 国际学生远程科研训练项目优秀学者奖（10/246）**

清华大学（机械工程系） 中国北京

助理研究员，王仁成副教授 2015 年 3 月 – 2015 年 6 月

实用睡眠质量监测方法及其应用研究

- 结合脑电仪，搭建硬件脑电波采集分析电路，制造可穿戴设备
- 基于采集的脑电信号，抽象并建立睡眠质量监测模型，以评测睡眠质量
- 实现软硬结合，在 ios 和 Android 平台编写应用，代码量 5,000 行
- 本平台测试结果与医学测试结果匹配度达 88%
- **获 2015 年度优秀清华大学本科生科研训练（SRT）项目奖项**

中国科学研究院（计算所） 中国北京

助理研究员，张勇东教授 2016 年 1 月 – 2016 年 2 月

基于局部敏感哈希算法的以图搜图系统实现

- 基于局部敏感哈希算法，提出改进的局部敏感哈希算法，代码规模 3,000 行
- 结合深度学习网络（RCNN），建立端到端的图像识别全自动系统
- 利用 PASCAL VOC 库 20 类图片测试该系统，准确程度达到 95%

获奖情况

奖学金

- 清华奖学金（科研优秀奖，社会工作优秀奖，文艺优秀奖） 2015
- 清华奖学金（科研优秀奖，社会工作优秀奖） 2016
- 清华奖学金（科研优秀奖，社会工作优秀奖） 2017
- 清华之友-宏乾奖学金 2017

获奖

- **Stanford Outstanding Research Assistant Award（斯坦福杰出研究学者）** 2015

掌握技能

计算机编程能力

- 软件编程：MatLab (20000+ 行), C/C++ (10000+ 行), C#, Python, HTML, Linux
- 硬件编程：Verilog, MIPS Assembly Language
- 工具：Caffe, Tensorflow, Pytorch, Open CV, LaTeX, Photoshop

语言能力

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

社工经历

清华大学电子工程系学生会 中国北京

- 对外交流与联系部 副主席
- 领导外联部，保证学生会每年约 20 万的赞助款项开源与整合。

清华大学电子工程系年度文艺晚会网络直播项目开发 中国北京

- 组长
- 三周之内从零开始，为全长五小时的年度文艺晚会建立直播网站，浏览量上万。

2015 年全球领导力竞赛 Silicon Valley, USA

- 杰出团队领袖
- 团队领导力 全球第三名