YUWEI QIU

Department of Electronic Engineering
Tsinghua University, Beijing. China
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EDUCATION

Tsinghua University — **Beijing, China**
B.E, Electronic Engineering — **09.2014 – 07.2018(EXPECTED)**

- **GPA**: *88/100*
- **Related Courses**
  - **Researches:** Digital Image Processing ***(95/100)***, Computer Graphics ***(95/100)***, Student Research Training A ***(95/100)***, Student Research Training B ***(95/100)***, Production Practice ***(95/100)***, *Robotic: Perception (Coursera)*
  - **Programming:** Advanced Matlab Programming and its Application ***(95/100)***, C/C++ Computer Program Design ***(93/100)***

University of Pennsyvania — **Philadelphia, PA**
GRASP Laboratory, Computer and Information Science — **07.2017 - PRESENT**

- Undergraduate Visiting Research Assistant

PUBLICATION

[1] **Yuwei Qiu**, Huimin Ma and Lei Gao. "Hardness Prediction for Object Detection Inspired by Human Vision" The 9th *International Conference of Image Graphics (ICIG 2017)*. Oral paper (~8%).
[2] Lei Gao, Huimin Ma, Chenhao Liu and **Yuwei Qiu**, "A Human Visual Bionic Framework for Object Recognition", accepted and to be published in *Journal of Graphics.*

RESEARCH EXPERIENCE

University of Pennsylvania, Department of Computer Information Science — **Philadelphia, PA**
General robotics, Automation, Sensing & Perception(GRASP) Laboratory
Research Assistant to Prof. Jianbo Shi
Project: Body Pose Prediction Based On First Person Videos — **07. 2017 – Present**

- Segmented body parts in pixel level from first person videos with complex context and high speed
- Proposed possible body poses from limited hands gesture with *LSTM*
- Completed 3-dimensional reconstruction of both environment and body pose from limited first person videos
- Generated sequences for human body motion proposals
- Now drafting a paper.

Tsinghua University, Department of Electronic Engineering — **Beijing, China**
3-D Image Simulation Laboratory
Research Assistant to Prof. Huimin Ma, Deputy Secretary-General of China Graphics Society
Project 1: Researches of eye-tracking devices and its applications in computer vision — **07. 2016 – 02. 2017**

- Theoretically quantized the human perception over scene content
- Extracted Detection Complexity, which predicts the performance of algorithms in advance
- Predicted object detection failures in *ILSVRC* with a precision of *0.94*
- Contributed to *a first-authored paper*, which has been selected to give an oral presentation in *ICIG 2017*

On-going: Mathematically models of psychological problems based on interactive devices — **03. 2017 – Present**

- Designed mental experiments for patients suffering from autism, mania and depression
- Extracted eye-tracking features, gene information and electroencephalogram for data mining
- Now attempting to mathematically model psychological diseases

Tsinghua University, Department of Electronic Engineering — **Beijing, China**
Intellectual Graphs and Texts Processing Laboratory
Research Assistant to Prof. Shengjin Wang
Project: Text recognition in natural context based on convolutional neural networks — **11. 2016 – 06. 2017**

- Aims at optimizing the end-to-end text recognition with convolutional neural networks
- Built up a dataset consist of *3500+ categories* of Chinese characters
- Trained a *multi-pathway network* for Chinese character and sentences consist of *3500+* categories
- Achieved a precision of *86.8%*
- Now drafting a paper

Stanford University, Department of Electronic Engineering Palo Alto, CA

Participants in a remote project of Prof. Tsachy Weissman

Remote project: Information theory methods for Magnetic Resonance Imaging 12. 2015 – 02. 2016

- Explored novel methods for medical image registration
- Connected the registration problem to recent advances in information theory and statistical signal processing
- Applied and optimized methods in information theory to medical image registration
- Completed a research demo and report (ranked *4th/146*)

Tsinghua University, Department of Electronic Engineering Beijing, China

Project of Computer Graphics

Course Project: Three-dimensional vector text construction and texture mapping 04. 2016 – 06. 2016

- Applied text segmentation in natural scenes with complex context information
- Used high-dimensional Bézier curves or B-splines to fit text in natural scenes
- Constructed and texture mapped three-dimensional models of the text based on two-dimensional graphs
- Ranked *1st/40*

Chinese Academy of Sciences, Institute of Computing Technology Beijing, China

Research Assistant to Prof. Yongdong Zhang

Project: Searching by images 08. 2015 – 10. 2015

- Searched by local-sensitive hashing
- Extracted pixel-level features from over *100,000 images*
- Tested the demo on *PASCAL VOC* contained 100,000 images and attained an accuracy of *0.9*

SELECTED HONORS

Scholarship and Fellowship

- Tsinghua Annual Undergraduate Scholarship (For outstanding academic, scientific and social achievement) **2015**
- Tsinghua Annual Undergraduate Scholarship (For outstanding social achievement) **2016**

Awards

- Outstanding Research Assistant (Stanford EE, Remote Project, *Rank 4/144*) **2015**

ADDITIONAL INFORMATION

Interests

My research interests lie in image, sequence and cognitive data analysis, motivated by the goals of creating highly intelligent robots and improving interaction between users and computer.

Researches fields that intrigue my interests: Computer Vision/Graphics, Cognitive science, Robotics, Machine learning

Computer and Language Skills

- **Languages:**
  MatLab *(20k+ lines)*, C/C++ *(10k+ lines)*, Python, C#, LaTeX, Linux, Verilog, MIPS Assembly Language
- **Tools:**
  Caffe, Tensorflow, Pytorch, Git
- **English Skills:**
  TOEFL: *108* = 28(Reading) + 27(Listening) + *26(Speaking)* + 27(Writing)
  GRE: *321* = *154(Verbal)* + 167(Quantitative) + 3.5(Analytical Writing)

EXTRACURRICULUM ACTIVITIES

EE Student Union

Chairman in charge of ***External Communication Department of Student Union @THUEE***

- Lead a team who raised nearly *USD 20,000* for financial sponsorship

Development for Live Broadcasting of 2017 Anniversary Party in EE department

Team leader

- Built up a website within 3 weeks for live broadcasting with millions of audience, which none of previous staff have ever achieved
- Successfully live broadcasting the anniversary party lasting for *5 hours with over 5000 clicks*

Global leadership competition 2015

Team captain

- Outstanding team captain
- Won the business design competition held at Intel, Silicon Valley, *the 1st place*

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

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