Zelun Wang

401 Joe Routt Blvd, College Station, TX 77843, USA, Texas A&M University
+1(979)402-6766 • wang14359@tamu.edu
http://psi.cse.tamu.edu/people/zelun-wang/

Education

Texas A&M University — **College Station**
Ph.D. Student, Dept. of Computer Science and Engineering — *2014.9–current*

Xi'an Jiaotong University — **Xi'an**
B.Eng., Dept. of Automation — *2010.9–2014.7*

National Tsing Hua University — **Taiwan**
Exchange Student, EECS — *2012.9–2013.1*

Research Interests

- Wearable Sensors, Biofeedback, Computer Vision, Machine Learning

Technical Skills

- **Language**: C, C++, Java, Android, Python, Ruby,Javascript,PHP
- **Tools**: Matlab, Latex, Eagle PCB

Publications

- **Z Wang**, T Jin, P Lin, R Gutierrez-Osuna, "Mixture quantification in the presence of unknown interferences", *The International Symposium on Olfaction and Electronic Nose.* (In press)
- **Z Wang**, A Parnandi, R Gutierrez-Osuna, "BioPad: Leveraging Off-the-Shelf Video Games for Stress Self-Regulation", *Journal of Biomedical and Health Informatics.* (2017)
- C Liberatore, S Aryal, **Z Wang**, S Polsley, R Gutierrez-Osuna, "SABR: Sparse, Anchor-Based Representation of the Speech Signal", *Sixteenth Annual Conference of the International Speech Communication Association.* (2015)
- **Z Wang**, J Wang, S Zhang, Y Gong, "Visual Tracking based on Online Sparse Feature Learning", *Journal - Image and Vision Computing.* (2015)
- S Zhang, J Wang, **Z Wang**, Y Gong, Y Liu, "Multi-target tracking by learning local-to-global trajectory models", *Journal - Pattern Recognition.* (2014)

Projects

Breath Components Analysis — *Texas A&M University*
- Implemented an active sensing algorithm to analyze the infrared spectrum of breath mixtures
- Inferred the concentrations of individual chemicals
- Designed a PCB on top of a Raspberry Pi to control the infrared sensors to collect spectrum data

Campus Parking Website Design — *Texas A&M University*
- Developed an on-campus parking suggestion system based on Google Maps API
- Gave personalized information to users and made suggestions for most convenient parking places

Website Design for Texas Auctioneers Association — *Texas A&M University*
- Developed an linked database system (MongoDB) for the Texas Auctioneers Association's website with Ruby on Rails
- Supported membership management, registration, etc.

Biofeedback Game Design — *Texas A&M University*
- Developed a biofeedback tool to leverage off-the-shelf video games for biofeedback training purposes

- Modified the signals from the game controller based on users' physiological signals
- Used the tool to teach stress management skills and conducted a user study

Anchor-based Representation of the Voice Conversion *Texas A&M University*

- Decomposed the speech signal into speaker-dependent and speaker-independent components
- Used the centroid for each phoneme as an acoustic anchor, and then applied Lasso regularization to represent each speech frame as a sparse non-negative combination of the anchors
- Successfully converted the voice of a source speaker to another target speaker

Compressive Tracking based on Sparse Coding *Xi'an Jiaotong University*

- Extracted high dimensional Haar-like feature from the targets in video sequences
- Used sparse coding algorithm to reduce its dimension and selected the most representative features, and combined with color moments feature
- Trained an online Bayesian classifier, and scored the detections in the following frame for concise tracking
- Introduced the classifier as part of the appearance models into the multi-target tracking tasks and improved its performance

Multi-Target Tracking in Video Sequences *Xi'an Jiaotong University*

- Formulated the multi-target tracking task as assigning target IDs to detections using a Markov Random Field model
- Implemented the Clear Mot evaluation tool based on ground truth data
- Visualized the tracking results and excluded tracking errors such as ID switches
- Applied after-treatment such as Kalman filter to trajectory models

Selected Awards

Outstanding Graduate Award:	*top 10% awarded*	*2014*
National Encouragement Scholarship:	*top 5% awarded*	*2013, 2012, 2011*
Outstanding Student Award:	*top 15% awarded*	*2013, 2012*
Outstanding Student Cadre Award:	*top 5 % awarded*	*2011*

王泽伦

401 Joe Routt Blvd, College Station, TX 77843, USA, Texas A&M University

+1(979)402-6766 wang14359@tamu.edu

http://psi.cse.tamu.edu/people/zelun-wang/

教育背景

德克萨斯 A&M 大学	博士生，计算机科学	2014.9-至今
西安交通大学	工学学士，自动化	2010.9-2014.7
台湾清华大学	交换生，电机资讯	2012.9-2013.1

科研兴趣

- 可穿戴式传感器，生物反馈，计算机视觉，机器学习

专业技能

- **编程语言**： C，C++，Java，Android，Python，Ruby，JavaScript，PHP
- **科学工具**： Matlab，LaTeX， Eagle PCB

学术论文

- **Z Wang**, T Jin, P Lin, R Gutierrez-Osuna, "Mixture quantification in the presence of unknown interferences", *The International Symposium on Olfaction and Electronic Nose.* (In press)
- **Z Wang**, A Parnandi, R Gutierrez-Osuna, " BioPad: Leveraging Off-the-Shelf Video Games for Stress Self-Regulation", *Journal of Biomedical and Health Informatics.* (2017)
- C Liberatore, S Aryal, **Z Wang**, S Polsley, R Gutierrez-Osuna, "SABR: Sparse, Anchor-Based Representation of the Speech Signal", *Sixteenth Annual Conference of the International Speech Communication Association.* (2015)
- **Z Wang**, J Wang, S Zhang, Y Gong, "Visual Tracking based on Online Sparse Feature Learning", *Journal - Image and Vision Computing*. (2015)
- S Zhang, J Wang, **Z Wang**, Y Gong, Y Liu, "Multi-target tracking by learning local-to-global trajectory models", *Journal - Pattern Recognition*. (2014)

项目经历

呼吸气体成分分析 德克萨斯 A&M 大学

- 用主动感测算法分析呼吸气体的红外光谱
- 推测呼吸混合物中各成分的浓度
- 针对 Raspberry Pi 设计了 PCB，用于控制传感器采集红外光谱

用于校园泊车的网站开发 德克萨斯 A&M 大学

- 基于 Google Maps API 开发了一个校园泊车的推荐系统
- 根据用户信息推送特别制定的泊车建议，帮助用户寻找车位

用于德克萨斯州拍卖协会的网站开发 德克萨斯 A&M 大学

- 基于 MongoDB 数据库和 Ruby on Rails，为德克萨斯州拍卖协会开发了一个网站
- 该网站用于会员信息管理，会员注册等

生物反馈游戏设计 德克萨斯 A&M 大学

- 开发了一个生物反馈工具，用于利用已存在的商业游戏进行生物反馈训练
- 基于用户的生理数据来修改游戏控制器的信号
- 用该工具训练用户的自我压力管理技能，基于此完成了一个用户研究实验

基于元语音表示法的语音转换 德克萨斯 A&M 大学

- 将语音信号分解为与发音人有关的和与发音人无关的成分
- 用音素的中心作为元语音，然后用 Lasso 回归法将每一帧语音用非负元语音稀疏表示
- 成功地将源发音转换为目标发音

基于稀疏编码压缩的目标追踪 西安交通大学

- 从视频序列中提取目标的高维哈尔特征
- 用稀疏编码算法对特征降维，选择最具代表性的特征，并与 color moments 结合
- 训练了一个在线的贝叶斯分类器，用于对下一帧画面的检测目标评分并追踪
- 将分类器用作目标模型的一部分，提高了多目标追踪的精度

视频中的多目标追踪 西安交通大学

- 用马尔科夫随机场模型将多目标追踪问题建模为一个目标标签分配问题
- 根据参考标准开发了 Clear Mot 评估工具
- 可视化追踪结果，并排除诸如标签交换之类的追踪错误
- 对追踪结果做后处理，例如用卡尔曼滤波器平滑追踪曲线

部分奖项

优秀毕业生	2014
国家励志奖学金	2013,2012,2011
优秀学生	2013,2012
优秀学生干部	2011