SHUAI MA

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EDUCATION

M.S., University of Chinese Academy of Sciences, *Computer Science*, ISCAS HCI Lab 2017.9 – 2020.7

B.S., Harbin Institute of Technology, *Software Engineering*, Software School Rank: $4th/170$ 2013.9 – 2017.7

EMPLOYMENT

Alibaba Health Machine Learning Group 2017.9 – 2017.12

ECG signal recognition model based on Faster-rcnn

- Based on the ROI layer idea, the ECG recognition model of Andrew Ng is investigated and reproduced to avoid redundant feature extraction operations. Training and testing on MIT-BIH data set, R-wave of ECG recognition recall up to 99.3%。
- Because noise interferes ECG signal greatly, the morphological features of ECG signal are studied unsupervised by using condensation clustering to achieve precise denoise.

Netease Beijing R&D Center NLP Group 2018.1 – 2018.3

A Rule + Statistics-based Model for Classical Chinese Translation

- Use Scrapy to implement a general crawler interface, which can crawl the required corpus data by changeing parameters.
- Write Map-Reduce program to download data from Hadoop cluster and implement segmentation function to complete word-to-word translation between classical Chinese and modern Chinese translation.
- Research, design and implement classical Chinese word segmentation method.

PUBLICATIONS

[1] **Shuai Ma**, Zijun Wei, Feng Tian, Xiangmin Fan, Jianming Zhang, Xiaohui Shen, Zhe Lin, Jin Huang, Radomir Mech, Dimitris Samaras, and Hongan Wang. SmartEye: Assisting Instant Photo Taking via Integrating User Preference with Deep View Proposal Network. In *Proceedings of the 37th Annual ACM Conference on Human Factors in Computing Systems (**CHI 2019**).*

[2] Jing Gao, Feng Tian, Junjun Fan, Dakuo Wang, Xiangmin Fan, Yicheng Zhu, **Shuai Ma**, Jin Huang, and Hongan Wang. Implicit Detection of Motor Impairment in Parkinson's Disease from Everyday Smartphone Interactions. In *Proceedings of the 36th Annual ACM Conference Extended Abstracts on Human Factors in Computing Systems (**CHI EA 2018**).*

[3] Liuping Wang, Xiangmin Fan, Feng Tian, Lingjia Deng, **Shuai Ma**, Jin Huang, and Hongan Wang. mirrorU: Scaffolding Emotional Reflection via In-Situ Assessment and Interactive Feedback. In *Proceedings of the 36th Annual ACM Conference Extended Abstracts on Human Factors in Computing Systems (**CHI EA 2018**).*

RESEARCHES

Evaluation of neurological function in mobile environment based on MRI 2016.10 – 2017.12

Parkinson's disease (PD) is a chronic neurological disorder causing progressive disability that severely affects patients' quality of life. Although early interventions can provide significant benefits, PD diagnosis is often delayed due to both the mildness of early signs and the high requirements imposed by traditional screening and diagnosis methods.

- In this paper, we explore the feasibility and accuracy of detecting motor impairment in early PD via sensing and analyzing users' common touch gestural interactions on smartphones. We investigate four types of common gestures, including flick, drag, pinch, and handwriting gestures, and propose a set of features to capture PD motor signs.
- Through a 102-subject (35 early PD subjects and 67 age-matched controls) study, our approach achieved an AUC of 0.95 and 0.89/0.88 sensitivity/specificity in discriminating early PD subjects from healthy controls. Our work constitutes an important step towards unobtrusive, implicit, and convenient early PD detection from routine smartphone interactions.

Providing emotional and information support to pregnant women with a chatbot 2018.12 – Now

The purpose of my work is:

- How to help pregnant women with AI techniques?
- How much do the pregnant women trust in the AI partners in this community?
- We adopt a seq2seq model trained with dialog data in a pregnant forum to implement a chatbot. We conduct an A/B test on the forum platform to conduct an user study.

Improving Well-Being via Prompting Gratitude Reflections 2017.10 – 2018.1

We present mirrorU, an intelligent mobile system that supports users to reflect on and write about their daily emotional experience. While prior work has mainly focused on providing memory triggers or affective cues, mirrorU enables scaffolded emotional reflection by continuously assessing the quality of a user’ s writing at composition time and generating relevant feedback to support the reflection process.

- In a six-week deployment with 30 participants, we found such in-situ assessment and feedback could not only help users generate reflections with more detailed descriptions and more insight/causal words which indicated better cognitive engagement, but also provide greater well-being benefits as assessed by psychological metrics.
- We discuss how the literature on emotional writing informed mirrorU’ s design, and highlight major findings as well as lessons learned from our study.

Integrating User Preference with Deep View Proposal Network 2018.3 – 2018.9

- The aim is to help every user who can’t take a picture to compose a picture he likes.
- The Photo Composition Recommendation Network (VPN) is designed and trained. VPN can input a photo at the speed of 75 FPS and output the sub-composition of topN ranking corresponding to the photo.
- By extracting user preferences for photo composition, a 32-dimensional feature is designed. Through interactive machine learning, a preference model is trained iteratively for each user. VPN and Preference model are embedded. The final model outperforms other DL models and pure VPN models in Average Bad/Good Rate, nDCG, Top1 Selection Rate and other indicators. Accepted by ACM CHI 2019[1].

Identifying Central Nervous System Disorders from Daily Walking Activities 2018.3 – Now

- The aim is to monitor users’gait in a non-task way in daily life, so as to predict users’ risk of central nervous system diseases.
- Through gait recognition and face recognition technology, the non-gait actions of the target user and the crowd disturbed by Kinect in front of the camera are filtered out.
- Gait data of patients with central nervous system diseases and normal people were collected in the clinic of Union Medical College Hospital. The 68-dimensional gait pathological characteristics were extracted and the disease was divided into two categories. AUC reached 0.96. Submitted to ACM Ubicomp 2018。

Improving Recognozers’ Performance by Leveraging the Continuity of Gesture Sequence 2018.3 – Now

- The aim is to solve the problem that the gesture set is too complex and the user’s cognitive burden is too heavy, and the shape of similar gestures is often confused.
- Dynamic Bayesian networks and partially observable Markov decision processes are used to estimate the most likely next step user gesture intentions in the current interaction context. Submitted to ACM IUI 2019.

Assistanting Instructor’s MOOC Teaching via Visualizing Students’ Emotional Feedback 2018.9 – Now

- In the existing MOOC live teaching, teachers can not know whether the students understand the knowledge they have just talked about in time as in the real classroom.
- Through facial feature extraction and expression recognition technology, the training model obtains students’emotional, cognitive load and engagement data, and presents them to teachers through visualization technology after summarizing and processing.

♡ HONORS & AWARDS

ACM CHI 2019 **Honorable Mention Award(1st author)**	**2019.3**
Reviewer of ACM CHI 2019	2018.10-2019.1
National Scholarship for Graduate Students	2018.10
Excellent Communist Party Members and Excellent Student Cadresof UCAS	2018.7
Special Award for Undergraduates of Harbin University of Technology	2017
National Scholarship for Undergraduates×2	2014-2016
Excellent Graduates of HIT(*Top*1%), HIT outstanding regiment soldiers, outstanding student cadres	2013-2017

i COMPETITIONS

Huawei Cup Free Software Programming Competition *The first prize*	2018.7
Kaggle WAD Video Segmentation Challenge (CVPR 2018)Semantic Segmentation and Recognition of Road Vehicles $4th/141teams$	2018.6
EmotiW 2018 (ICMI Challenge) International Emotional Recognition Competition *No. 23 in the world*	2018.6
The Fifth National Marine Vehicle Design and Manufacturing Competition *First prize*	2016.8
Eighteenth National Robot Championship *First Prize* ×2	2016.7
Tianchi Big Data Competition-Sina Weibo Interactive Prediction *Top*5%	2015.9