Ru Wang

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EDUCATION

University of California, San Diego *San Diego, CA*
M.S. in Computer Science, GPA: 3.86/4.00 *Sep 2019 - Jun 2021 (Expected)*

Shanghai Jiao Tong University *Shanghai, China*
B.S. in Information Engineering, GPA: 3.71/4.00 *Sep 2015 - Jun 2019*

PUBLICATION

Zhuoran Song, **Ru Wang**, Dongyu Ru, Zhenghao Peng, Hongru Huang, Hai Zhao, Xiaoyao Liang, Li Jiang, "Approximate Random Dropout for DNN training acceleration in GPGPU," 2019 Design, Automation & Test in Europe Conference & Exhibition (DATE)

RESEARCH PROJECTS

Adaptive workload-management using a portable EEG headset *Jul 2020 - Present*
Advised by Prof. Xinyu Zhang, UCSD ECE
- Led the project and developed a closed-loop system for adaptive cognitive+visual workload mitigation,
- Developed a ResNet+LSTM model for workload level classification, with EEG power spectrum density as the input.

Gazescape: a social translucent video conferencing tool that enables eye-contact *Jul 2020 - Present*
Advised by Prof. Nadir Weibel, UCSD CSE
- Led the project and developed an SFU (Selective Forwarding Unit) based video conferencing system with MediaSoup,
- Integrated a web-cam based eye tracking API to enable real-time eye tracking,
- Designed different gaze visualizations to simulate eye contact for different social intentions.

ARTEMIS: Augmented Reality Technology-Enabled reMote Integrated Surgery *Jul 2020 - Present*
Advised by Prof. Nadir Weibel, UCSD CSE
- Ran cadaver studies to evaluate the system and observe user (expert surgeon and novice surgeon) behaviors,
- Designed study protocols for user training and system testing in response to COVID-19.

On-Shelf Product Image Generation for Product Classification using GAN *Mar 2019 - May 2019*
Advised by Dr. Cong Yang and Prof. Weiyao Lin, Clobotics
- Built a dataset of 50k+ real product images with a self-built turntable and camera system,
- Trained a Cycle-GAN model that can generate on-shelf product images using our dataset,
- The generated 'fake' on-shelf product images boosted our product classification model's recall by 0.1.

ThumbTrak: Continuous One-handed Thumb-on-fingers Input *Jul 2018 - Jan 2019*
Advised by Prof. Cheng Zhang, Information Science, Cornell University
- Built the hardware prototype with 2 IMUs and a proximity sensor to model the user's hand,
- Designed an algorithm to reconstruct the movement of thumb on fingers based on projective transformation,
- Developed a gesture recognition method for text entry; the accuracy of text entry with our system is 0.91.

Approximate Random Dropout for DNN training acceleration in GPGPU *Dec 2017 - May 2018*
Advised by Prof. Li Jiang, Advanced Computer Architecture Lab, SJTU
- Designed a time-efficient dropout algorithm to reduce useless computation in matrix multiplication,
- Implemented a fully-connected layer and convolution layer with our dropout algorithm in Caffe,
- Our fully-connected layer is 2X faster than original in training phase, with acceptable accuracy drop in testing phase.

WORK EXPERIENCE

Tencent *Beijing, China*

Software Engineering Intern *Jun 2019 - Aug 2019*

Worked on a Spark-based real-time stream processing system for ads.

- Developed an online stream receiver for the system to access data from multiple real-time message queues,
- Optimized the system to enable a higher level of parallelism,
- Reduced batch interval from 1min to 5s without data consumption lag.

Clobotics *Shanghai, China*

Software Engineering Intern *Dec 2018 - Jun 2019*

Worked on a computer vision-based system that can recognize the drinks in a beverage cooler and analyze the sales.

- Developed a software to automate labeling task creation, model updating and model deployment,
- Developed an Android application that can instruct and assist users to install and maintain the system,
- Developed a web server with Flask for interaction between maintainers and the system.

TECHNICAL SKILLS

Programming:	Python, C/C++, C#, JavaScript, Java, Scala, LaTeX, HTML/CSS, Git
Software & Tools:	**ML/DL:** PyTorch, Scikit-Learn
	Others: Spark, Unity, Android Studio, Arduino, Adobe Illustrator