

# Zhexiao Guo “Michael,”

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## Education Experiences

Master: 2013.09 ~ 2016.06  
Department of Biomedical Engineering  
**Shenzhen University, China**

Bachelor: 2008.09 ~ 2012.06  
Department of Computer of Science and Technology  
**Guangdong Pharmaceutical University, China**

## Professional Experiences

Research Assistant: 2020.01 ~ Now  
Department of Chinese and Bilingual Studies  
**Hong Kong Polytechnic University, Hong Kong**

Research Assistant: 2019.01 ~ 2019.12  
Department of Biomedical Engineering  
**Shenzhen University, China**

Visiting Scholar: 2016.09 ~ 2018.12  
Department of Computer and Information Sciences  
**Universität Konstanz, Germany**

## Research Interests

Virtual Reality for L2 learning; Adult L2 learning; Big data analysis via deep learning

## Research Experiences

- a) Using Virtual Reality to study L2 Learning, Advisor: Prof. Ping Li, Status: Ongoing  
Several immersive virtual reality environments are constructed to offer a flexible platform to simulate a real-life immersive learning situation, while allowing the researcher to have tight experimental control for stimulus delivery and learner interaction with the environment.
- b) Updating Language History Questionnaire 3, Advisor: Prof. Ping Li, Status: Ongoing  
The Language History Questionnaire 3 (LHQ3) (Li, Zhang, Yu & Zhao, 2019) is an important tool for assessing the linguistic background and language proficiency of multilingual or second language learners. We aim at updating it to LHQ4 by adding new affective-related questions, user-friendly interactions and modern appearance.
- c) Computerized evaluation of facial palsy, Advisor: Prof. Guo Dan, Prof. Yongjin Zhou, Status: Finished  
Several computerized evaluation approaches were proposed to evaluate the facial symmetry for facial palsy based on a customized camera system. And a facial palsy image database for this project was built, including about 105 clinical subjects.

*Related publications:*

Guo, Z., Dan, G., Xiang, J., Wang, J., Yang, W., Ding, H., & Zhou, Y. (2017). An unobtrusive computerized assessment framework for unilateral peripheral facial paralysis. *IEEE journal of biomedical and health informatics*, 22(3), 835-841.

Guo, Z., Shen, M., Duan, L., Zhou, Y., Xiang, J., Ding, H., & Dan, G. (2017, April). Deep assessment process: Objective assessment process for unilateral peripheral facial paralysis via deep convolutional neural network. In *2017 IEEE 14th international symposium on biomedical imaging (ISBI 2017)* (pp. 135-138). IEEE.

Guo, Z., Li, W., Dai, J., Xiang, J., & Dan, G. (2021). Facial imaging and landmark detection technique for objective assessment of unilateral peripheral facial paralysis. *Enterprise Information Systems*, 1-17.

Feng, J., Guo, Z., Wang, J., & Dan, G. (2020). Using eye aspect ratio to enhance fast and objective assessment of facial paralysis. *Computational and mathematical methods in medicine*, 2020.

d) Lower limb prediction from upper limb data for rehabilitation, Advisor: Prof. Guo Dan, Status: Finished

The participating ability of patients could speed up the rehabilitation process for lower limb paralysis patients. Instead of the presetting driving method, a lower limb trajectory prediction method was proposed in this research to drive a lower-limb robotic system.

Related publication:

He, J., Guo, Z., Shao, Z., Zhao, J., & Dan, G. (2020). An LSTM-based prediction method for lower limb intention perception by integrative analysis of Kinect visual signal. *Journal of Healthcare Engineering*, 2020.

e) Quantifying calligraphic for creative personal styles, Advisor: Prof. Oliver Deussen, Status: Terminated

The goal of this research is to enable a robot arm to create calligraphic artwork with limited or even without any human intervention. we want to be able to create calligraphy in the whole spectrum of emotions that were encoded by artists in their artworks.

f) Image enhancement with a vein viewer, Advisor: Prof. Guo Dan, Prof. Yongjin Zhou, Status: Finished

An enhancement strategy to improve the quality of images from a customized low-cost binocular vein viewer system. The proposed strategy demonstrated better performance in the pre-processing stage for the vein viewer.

Related publication:

Dan, G., Guo, Z., Ding, H., & Zhou, Y. (2015). Enhancement of dorsal hand vein image with a low-cost binocular vein viewer system. *Journal of Medical Imaging and Health Informatics*, 5(2), 359-365.

## Awards

✧ China National Scholarship for Postgraduate/Graduate students in 2014.

## Publications

1. **Guo, Z.**, Dan, G., Xiang, J., Wang, J., Yang, W., Ding, H., & Zhou, Y. (2017). An unobtrusive computerized assessment framework for unilateral peripheral facial paralysis. *IEEE journal of biomedical and health informatics*, 22(3), 835-841.
2. **Guo, Z.**, Shen, M., Duan, L., Zhou, Y., Xiang, J., Ding, H., & Dan, G. (2017, April). Deep assessment process: Objective assessment process for unilateral peripheral facial paralysis via deep convolutional neural network. In *2017 IEEE 14th international symposium on biomedical imaging (ISBI 2017)* (pp. 135-138). IEEE.
3. **Guo, Z.**, Li, W., Dai, J., Xiang, J., & Dan, G. (2021). Facial imaging and landmark detection technique for objective assessment of unilateral peripheral facial paralysis. *Enterprise Information Systems*, 1-17.
4. He, J., **Guo, Z.**, Shao, Z., Zhao, J., & Dan, G. (2020). An LSTM-based prediction method for lower limb intention perception by integrative analysis of Kinect visual signal. *Journal of Healthcare Engineering*, 2020.
5. Feng, J., **Guo, Z.**, Wang, J., & Dan, G. (2020). Using eye aspect ratio to enhance fast and objective assessment of facial paralysis. *Computational and mathematical methods in medicine*, 2020.
6. Dan, G., **Guo, Z.**, Ding, H., & Zhou, Y. (2015). Enhancement of dorsal hand vein image with a low-cost binocular vein viewer system. *Journal of Medical Imaging and Health Informatics*, 5(2), 359-365.

7. He, J., Chen, S., **Guo, Z.**, Pirbhulal, S., Wu, W., Feng, J., & Dan, G. (2019). A comparative study of motion recognition methods for efficacy assessment of upper limb function. *International Journal of Adaptive Control and Signal Processing*, 33(8), 1248-1256.
  8. Duan, L., Shen, M., Cui, S., **Guo, Z.**, & Deussen, O. (2018). Estimating 2d multi-hand poses from single depth images. *In Proceedings of the European Conference on Computer Vision (ECCV) Workshops*.
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## **Presentations**

1. 2018 15th European Conference on Computer Vision, Workshop on Observing and Understanding Hands in Action.
  2. 2017 4th China Visualization and Visual Analytics Conference, China-Germany Visualization Workshop.
  3. 2017 IEEE 14th international symposium on biomedical imaging (ISBI 2017).
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## **Skill sets**

1. Language proficiency: Mandarin, native; Cantonese, fluent; English, TOEFL 82;
2. Fast learner in the STEM area, especially in computer science area;
3. Development skill: Skillful in using major programming languages, especially C++, C#, Python and MATLAB; Skillful in using virtual reality design programs, especially Unreal and Unity3D; Experienced in developing both online and offline applications.
4. Experienced in maintaining a website, currently the website of Brain, Language, and Computation Lab and the website of Language History Questionnaire 3.