

## **Xuelian Zang**

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### **Education**

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**July 2014-present Postdoctoral Fellowship, in the Department of Experimental Psychology, Ludwig-Maximilians-Universität München (LMU), Germany**

Research topic: Visual perception, Virtual reality, Crossmodal search, Multisensory perception

**2011-2014 Doctoral student in the Department of Psychology, Ludwig-Maximilians-Universität München, Germany**

*Defense was finished on 02.07.2014, with excellent performance (summa cum laude).*

**Research Interests:** Contextual cueing, temporal expectation, multisensory perception

**Thesis Title:** Differential contributions of global, local and background contexts in contextual-guided visual search

**Supervisors:** Prof. Hermann J. Müller, PD Dr. Zhuanghua Shi, and PD Dr. Thomas Geyer

**Brief Synopsis of Research:** Contextual cueing is an effect that humans are faster in respond to repeatedly presented scenes compared to novel scenes during visual search. We examined the role of different contexts (global, local or background contexts) in contextual cueing. Three main findings were observed: 1) Spatial context can be learned based on barely local context, but to effectively retrieve the learned context, global context is necessary. 2) The already learned contextual cueing can be transferred to the varied displays only when the variation is predictable. 3) Different background-foreground segmentation affects spatial context learning and retrieval.

During my PhD study I have also led the practical parts of several seminars (together with PD Dr. Zhuanghua Shi), supervised research topics of undergraduates in the laboratory.

**2007-2009 Master student in Measurement Technology and Automation Equipment, China Agricultural University.**

*Overall GPA 3.34 / 4.0 (equal to 'Gut' in Germany).*

**Main Course:** Embedded System, Optimal Control, Modern Control Theory, Matrix Theory and etc.

**2003-2007 Bachelor student in Automation (Graduation with Honors), China Agricultural University.**

*Overall GPA 3.48 / 4.0 (equal to 'Gut' in Germany), honors each year.*

## **Professional Experience**

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**2011-Present I have worked on several research projects during my doctoral and post-doctoral research.**

1. Invariant spatial context is learned but not retrieved in gaze-contingent limited-viewing search (Eye tracker technique is used in this project).
2. Transfer of contextual cueing in full-icon display remapping (Touch screen was used for participants' response.).
3. The effect of foreground-background segmentation in contextual-guided visual search (3D technology were used.).
4. The luminance and contrast effect between configural context and background influence contextual learning (Ongoing project).
5. The additivity and grouping effect of depth information in contextual cueing (Ongoing project).
6. The interactions between short-term memory and contextual cueing (Ongoing project. Cooperated with my colleague. I mainly responsible for experimental setting and programming).
7. Contextual cueing in tactile modality (Ongoing project, and cooperate with colleague).
8. The effect of emotion, embodiment in time perception (cooperated with colleagues).

**2009-2011 Research Assistant in Technische Universität München (TUM), Germany.**

I worked on the research project 'Temporal attention control' during this time period: An important ability for mobile robots is to process multiple tasks in complex environments. Since the sensor resources on a robot are limited, it is necessary to distribute the sensors attention to different tasks along the time scale. As a result, we designed a "Temporal Visual Attention Control Algorithm" to track multiple objects with a single actuated camera.

## **Scholarships and awards**

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1. 2013 European Conference on Visual Perception Travel Award;
2. 2009-2013 Doctoral scholarship from Chinese Scholarship Council (CSC);
3. 2007 Outstanding graduate of China Agricultural University (<10%);
4. 2004-2007 Scholarships for outstanding students, China Agricultural University;
5. 2006 National scholarship sponsored by the Ministry of Education, China;
6. 2005 National scholarship sponsored by the Ministry of Education, China.

## **Skills**

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General skills in research project management and data analysis. Specific expertise and interests in:

### **Computer Skills:**

1. Programming Languages: Matlab, C, C++, R;
2. Applications: Microsoft Office Suite, Latex, SPSS, Scrivener and etc.;
3. Operating Systems: Windows 7, Windows XP, Linux;
4. Others: Eyelink 1000; 3D Visual System; Tactile equipment; Oculus.

### **Language skills:**

1. Chinese (native speaker)
2. English (fluently written and spoken)
3. German (intermediate).

## **Selected Conferences and workshops**

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1. International Multisensory Research Forum (IMRF 2016), June, 2016, Suzhou, China ;
2. International Multisensory Research Forum (IMRF 2015), June, 2015, Pisa, Italy ;
3. European Conference on Visual Perception (ECVP), August 2015, Liverpool, England;
4. Conference of Experimental Psychologists (TeaP), March, 2015, Hildesheim, Germany;
5. 36th European Conference on Visual Perception (ECVP), August 2013, Bremen, Germany;
6. Conference of Experimental Psychologists (TeaP ), March, 2013, Vienna, Austria;
7. The 31st Chinese Control Conference, July, 2012, Hefei, China;
8. Visual Search and Selective Attention (VSSA), July, 2012, Ammersee, Germany.

## **Publications**

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1. **Zang X.**, Geyer T., Assumpção L., Müller H.J. and Shi Z. (2016) From Foreground to Background: How Task-Neutral Context Influences Contextual Cueing of Visual Search. *Front. Psychol.* 7:852.doi: 10.3389/fpsyg.2016.00852.(in press).
2. Shi, Z., **Zang, X.**, & Geyer, T. (2016) What fixations reveal about oculomotor scanning behaviour in visual search, *Behavioural and Brain Sciences*.(in press).
3. Jia, L., Shi, Z., **Zang, X.**, Müller, H. J. (2014). Watching a near-body moving object expands tactile duration: The role of action context on subjective time. *Attention, Perception, & Psychophysics*, 77(8):2768-2780.
4. Jia, L., Wang L., **Zang, X.**, Feng,W., Zhang, Z. (2015), Modulation of emotion on time perception: An embodiment perspective. *Advances in Psychological Science*, 23(8): 1331-1339.
5. Assumpcao, L., Shi, Z., **Zang, X.**, Müller, H. J., Geyer, T. (2015). Contextual cueing: implicit memory of tactile context facilitates tactile search. *Attention, Perception, & Psychophysics*, 77(4), 1212-1222, 10.3758/s13414-015-0848-y.
6. **Zang, X.**, Jia, L., Müller, H. J., Shi, Z. (2015), Invariant spatial context is learned but not retrieved in gaze-contingent limited-viewing search. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 41(3), 807-819.
7. Shi, Z., **Zang, X.**, Jia, L., Geyer, T., Müller, H. J. (2013). Transfer of contextual cueing in full-icon display remapping. *Journal of Vision*, 13(3):2, 1–10, doi:10.1167/13.3.2.
8. Jia, L., Shi, Z., **Zang, X.**, Müller, H. J. (2013), Concurrent emotional pictures modulate spatial-separated audio-tactile temporal order judgments, *Brain Research*, 1537:156-163.
9. **Zang X.**, Bršćic D, Wang W. Hirche S., Kühnlentz K. (2012), Human behavior inspired temporal attention control system for multiple object tracking. *Journal of University of Science and Technology of China*, 2012, 42(9): 714-722.

10. **Zang X.**, Bršćic D., Wang W., Kühnlenz K. (2012), Temporal attention control system for multiple objects tracking, Proceedings of the 31<sup>st</sup> Chinese Control Conference (CCC'2012), p. 4836-4841.
11. **Zang X.**, Wang J., Yu X., (2008). Research of Image Incline Correction Algorithm in Cow Face Recognition. Journal of Agricultural Mechanization Research (In Chinese).
12. Guo Z., Wang J., **Zang X.**, (2008). The system Construction of Embedded milk Guard Based on ARM- $\mu$ CLinux. Journal of Agricultural Mechanization Research (in Chinese).
13. Yu X., Wang J., **Zang X.**, (2008). Application of embedded Web sever to diary farm network system. Journal of Agricultural Mechanization Research (In Chinese).
14. Xiong L., Wang J., **Zang X.**, (2007). Design of the Automatic Milking Machine Controller Based on ARM. CCTA2007 (Conference on Computer and Computing Technologies in Agriculture). (in Chinese).

### **Papers under preparation**

1. **Zang, X.**, Geyer, T., Müller, H. J., Shi, Z., The effect of background gestalt structure in contextual-guided visual search. (*Under preparation*).
2. **Zang, X.**, Huang L., Geyer, T., Müller, H. J., Shi, Z., Contextual learning is modified by foreground-background contrast and luminance. (*Under preparation*).

### **Selected Teaching Experiences:**

1. NCP winter project, 2015, “The investigation of multisensory effect in contextual-guided visual search”, LMU, Germany;
2. Internship project 2014-2015, “The grouping effect and adaptivity of contextual cueing in 3D vision domain”, LMU, Germany;
3. Internship project 2014-2015, “The luminance effect in contextual cueing”, LMU, Germany;
4. Winter Semester 2014-2015, tutorial “Spatial reference frame of tactile contextual cueing”, Classical psychological methods for NCP Master students, LMU, Germany;
5. Summer Semester 2014, tutorial “Contextual cueing in mesopic vision”, Neuro-cognitive psychology for Master students, LMU, Germany;

6. Winter Semester 2012-2013, tutorial “The effect of emotional picture and music effect in time estimation”, Practical course psychophysics for bachelor students.
7. Mentor of main seminar for Master student, 2010-2011, “Comparision and Evaluation of Multi-Modal Visual Attention System for Mobile Robots”, TUM, Germany;