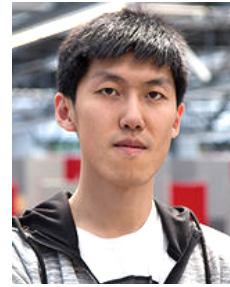


# Fan ZHANG

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An experienced researcher in human-centered research with multi-disciplinary backgrounds in vision, visual perception, attention, psychophysics, and cognitive robotics.



## Research Experience

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|-------------------|--|----------------------------|
| 12/19-<br>present | <b>University of Birmingham</b><br><b>Computational Cognition Research Fellow (postdoctoral)</b><br><u>ESRC-NSF(SBE) with Dr. Dietmar Heinke at Psychology Department</u>  | United Kingdom             |
|                   | <ul style="list-style-type: none"><li>• Establish online cognitive-psychological experiment (coding in jsPsych)</li><li>• Develop computational models of visual attention and reaching action</li><li>• Simulate human reaching behaviors using a 3-joint robot arm</li><li>• Supervise MSc and BSc students in research modules and their Thesis projects</li></ul>  |                            |
| 12/18-<br>07/19   | <b>Procter &amp; Gamble</b><br><b>Delft University of Technology</b><br><b>Consumer Market Knowledge Research Fellow (postdoctoral)</b>  | Germany<br>The Netherlands |
|                   | <ul style="list-style-type: none"><li>• Measure and model user's multisensory premium-ness experience on certain products<ul style="list-style-type: none"><li>○ Create video stimuli that convey multisensory information for the products</li><li>○ Design user-friendly interface for testing user's visual-tactile perception</li><li>○ Represent product premium-ness as a function of physical attributes</li></ul></li><li>• Provide guidelines for improving the empirical product design process</li><li>• Deliver internal reports and other deliverables (e.g. video demos) to P&amp;G</li></ul>  |                            |
| 11/13-<br>11/18   | <b>Delft University of Technology</b><br><b>Human Information Communication Design - Industrial Design Engineering</b><br><b>Ph.D. in Perceptual Intelligence - Visual Perception</b><br><u>EU Marie-Curie ITN (FP7) with Prof. Sylvia Pont and Prof. Huib de Ridder</u>   | The Netherlands            |
|                   | <ul style="list-style-type: none"><li>• Quantitatively measure and model user's visual experience on material appearance, and understand the influence of lighting and 3D shape.</li><li>• Create a set of real (photography) and rendered (Blender) image stimuli</li><li>• Conduct psychophysical experiments using novel interactive interfaces</li><li>• Interpret user data into intuitive understandings for visual perception and design<ul style="list-style-type: none"><li>○ Mapping physical properties and associated perceptual judgements</li><li>○ Identify optical cues that trigger human visual perception of material qualities</li><li>○ Data analysis for multivariate statistics in visual perception (MATLAB/R/SPSS)</li></ul></li><li>• Thesis: <i>On Probing Appearance: Testing Material-Lighting Interactions in an Image-based Canonical Approach</i></li><li>• The project is an EU-founded research and training network, with Philips and Next Limit as industrial partners</li></ul> |                            |

## COLLABORATIONS AND SECONDMENTS

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- 12/20-  
now **Cognition and Modelling** United States  
Collaborator: Dr. Joo-Hyun Song, at University of Brown
- Understand how recent selection history biases target selection performance via concerted operation between the selection of attention and action
- 04/16-  
11/18 **Visual optimization for material appearance** France  
Collaborator: Dr. Pascal Barla, at INRIA Bordeaux Sud-Ouest
- Improve user's visual experience on materials by providing optimal lighting
    - Develop prototypes of canonical material and lighting modes using optics-based computational models (OpenGL)
    - Develop a protocol to test complex material-lighting interactions
    - Validate predictions of lighting effects on canonical materials
    - Publications in peer-reviewed journals
- 02/15-  
05/15 **Prototyping** Germany  
Secondment, hosted by Prof. Roland Fleming at University of Giessen
- Develop prototypes of canonical material modes using 3D modelling (Blender) and rendering (Maxwell Render)
  - Experimental design for testing glossiness perception in a project collaborating with a local car coating company

## Education

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- 09/12-  
09/13 **King's College London** United Kingdom  
**M.Sc. in Robotics**
- Graduate with Distinction
  - Thesis: *A Neural Network for Solving the Stereo Correspondence Problem*. I developed a stereovision version of an existing neural network model of primary visual cortex cells, implemented the model on simple artificial scenes and complex realistic scenes.
  - Core Courses: Artificial Intelligence, Computer Vision, Computer-aided Manufacturing and Design, Pattern Recognition, Real-Time Systems and Control, Robotics Systems, Sensors and Actuators
- 09/07-  
07/11 **Shanghai Jiao Tong University** China  
**B.Eng. in Mechanical Engineering and Automation**
- Focus: Computer-aided Manufacturing and Design
  - Thesis: *The Identification of Tool Cutting Condition Based on AE (Acoustic Emission) Signal*: building hardware and software platforms for receiving and processing the AE signal to identify specific tool conditions on lathe and milling machines.

## PROFESSION SKILLS

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Programming:	MATLAB, JavaScript(jsPsych), OpenGL(GLSL)
Statistical Analysis:	MATLAB, SPSS, R
Design and Engineering:	Blender, Maxwell Render, Photoshop, AutoCAD
Language:	Mandarin Chinese (native); English (proficient)

## PUBLICATION LIST

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- Journal Paper **Effects of light direction and shape on the visual perception of canonical materials.**  
Zhang, F., de Ridder, H., Barla, P., & Pont, S. (2020).  
*Journal of Vision*, 20(4), 1-18. doi:10.1167/jov.20.4.13
- A systematical approach to testing and predicting light-material interactions.**  
Zhang, F., de Ridder, H., Barla, P., & Pont, S. (2019).  
*Journal of Vision*, 19(4), 1-22. doi:10.1167/19.4.11
- Asymmetric perceptual confounds between canonical lightings and materials.**  
Zhang, F., de Ridder, H., & Pont, S. (2018).  
*Journal of Vision*, 18(11), 1-19. doi:10.1167/18.11.11
- MatMix 1.0: Using optical mixing to probe visual material perception.**  
Zhang, F., de Ridder, H., Fleming, R. W., & Pont, S. (2016).  
*Journal of Vision*, 16(6), 11, 1-18. doi:10.1167/16.6.11
- Conference Paper **The influence of lighting on visual perception of material qualities.**  
Zhang, F., de Ridder, H., & Pont, S. (2015).  
*In Proc. SPIE/IS&T 9394, Human Vision and Electronic Imaging XX*, (pp. 93940Q-93940Q). *The international society for optics and photonics*.  
doi:10.1117/12.2085021
- Invited Talk **Visual perception of canonical material modes and its interactions with canonical lighting modes.**  
Zhang, F., de Ridder, H., & Pont, S. (2016, December).  
*FriKo*, at the Max Planck Institute for Biological Cybernetics, in Tübingen, Germany.
- Conference Abstract **Canonical specular and velvety material modes form a basic feature in visual search.**  
Zhang, F., & Heinke, D. (Accepted).  
*Poster presentation at 2021 Visual Science Society Annual Meeting*
- Dissociating mechanism underlying selection history bias for goal-directed reaching movements.**  
Makwana, M., Zhang, F., Song, J., & Heinke, D. (Accepted).  
*Poster presentation at 2021 Visual Science Society Annual Meeting*
- Lighting effects on the perception of fresh produce.**  
Zhang, F., & Pont, S. (2019, Poster).  
*Journal of vision*, 19(10), 244-244. doi:10.1167/19.10.244
- Material dependent appearance effects brought out by natural light environments.**  
Zhang, F., de Ridder, H., Barla, P., & Pont, S. (2017).  
*Poster session presented at European Conference on Visual Perception (ECVP), Berlin, Germany*

**The interplay between material qualities and lighting.**

Zhang, F., de Ridder, H., van Egmond, R., & Pont, S. (2017, Talk).  
*Journal of vision*, 17(10), 228-228. doi:10.1167/17.10.228

**Canonical Material and Illumination Confounds.**

Zhang, F., de Ridder, H., & Pont, S. (2016, Poster).  
In *PERCEPTION* (Vol. 45, pp. 130-130).

**Can people match optically mixed canonical lighting modes?**

Zhang, F., de Ridder, H., & Pont, S. (2016, Poster).  
*Journal of Vision*, 16(12), 642-642. doi:10.1167/16.12.642

**The influence of illumination on perception of works by Jan Schoonhoven**

Wijntjes, M., te Pas, S., Schoemaker, M., Pont, S., Zhang, F., Kartashova, T., & van Middelkoop, C., (2016).  
*Poster session presented at Visual Science of Art Conference (VSAC), Barcelona, Spain*

**Matmix 1.0, a novel material probe for quantitatively measuring visual perception of materials.**

Zhang, F., de Ridder, H., & Pont, S. (2015, Poster).  
*Journal of Vision*, 15(12), 824-824. doi:10.1167/15.12.824

**Towards an interactive probe for material studies.**

Zhang, F., de Ridder, H., & Pont, S. (2014, Poster).  
In *Proceedings Experiencing light 2014: international conference on the effects of light on wellbeing, Eindhoven, The Netherlands, 10-11 November 2014* (p. 119).