



Fan ZHANG

An early-stage researcher with multi-disciplinary backgrounds in psychophysics, interaction design, modelling, data analysis, computer vision, and manufacturing.

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EDUCATION BACKGROUNDS

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| 11/13-present | Delft University of Technology
Human Information Communication Design Section, Industrial Design Department
Ph.D. in Perceptual Intelligence - Visual Perception
<u>EU Marie-Curie ITN (FP7) with Prof. Sylvia Pont and Prof. Huib de Ridder</u> | The Netherlands |
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- An EU-founded research and training network – Perceptual Representation of Illumination, Shape & Material ([PRISM](#)).
 - Aim: to measure and improve user’s visual experience on material appearance, which is influenced by endless combinations of multiple variables.
 - Achievements:
 - Develop a novel probing method to quantitatively measure user’s visual perception of materials
 - Interpret user data into intuitive understandings for visual perception and design
 - Mapping physical material properties and associated perceptual judgements
 - Identify optical cues that trigger visual perception of material qualities
 - Research method:
 - Psychophysical experiments using novel interactive interfaces
 - Image processing for datasets of scenes varying parametrically
 - Optics-based computational modelling of canonical lighting and material modes
 - Data analysis for multivariate statistics in visual perception
 - Close work relations with UX designers and human-computer interaction designers
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| 09/12-09/13 | King’s College London
M.Sc. in Robotics | UK |
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- Graduate with **Distinction**
 - **Focus:** Computer Vision/Machine Learning
 - **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
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| 09/07-07/11 | Shanghai Jiao Tong University
B.Eng. in Mechanical Engineering and Automation
<u>Chinese-English Bilingual Program</u> | China |
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- **Focus:** Computer-aided Manufacturing and Design
 - **Thesis:** *The Identification of Tool Cutting Condition Based on AE (Acoustic Emission) Signal*. I participated in building hardware and software platforms for receiving and processing the AE signal to identify specific tool conditions in manufacturing processes.

ADDITIONAL PROJECTS AND COLLABORATIONS

- 04/16- **Visual optimization for material appearance** France
present Hosted by [Dr. Pascal Barla](#) at INRIA Bordeaux Sud-Ouest
- Aim: to improve user's visual experience on materials by providing optimal lighting
 - Achievements:
 - Develop prototypes of canonical material and lighting modes using optics-based computational models
 - Develop a protocol to test complex material-lighting interactions
 - Validate predictions of lighting effects on materials
- 02/15- **Prototyping and experiment** Germany
05/15 Hosted by [Prof. Roland Fleming](#) at University of Giessen
- Develop prototypes of canonical material modes using 3D modelling and rendering technique
 - Experimental design for testing glossiness perception in a project collaborating with a local car coating company (CARL SCHLENK AG).

PROFESSION SKILLS

Programming: MATLAB, R
Design and Engineering: Photoshop, Blender, MaxwellRender, AutoCAD, UG/NX
Language: Mandarin Chinese (native); English (proficient)

PUBLICATION LIST

- Journal Paper Zhang, F., de Ridder, H., & Pont, S. (in press).
Asymmetric perceptual confounds between canonical lightings and materials. *Journal of vision*, in press.
- Zhang, F., de Ridder, H., Barla, P., & Pont, S. (2018).
A systematical approach to testing and predicting light-material interactions. *Manuscript submitted for publication*
- Zhang, F., de Ridder, H., Barla, P., & Pont, S. (2018).
Effects of light direction and shape on the visual perception of canonical materials. *Manuscript submitted for publication*
- Zhang, F., de Ridder, H., Fleming, R. W., & Pont, S. (2016).
MatMix 1.0: Using optical mixing to probe visual material perception. *Journal of vision*, 16(6), 11, 1-18. doi:10.1167/16.6.11
- Conference Paper Zhang, F., de Ridder, H., & Pont, S. (2015).
The influence of lighting on visual perception of material qualities.
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 Zhang, F., de Ridder, H., & Pont, S. (2016, December).
Visual perception of canonical material modes and its interactions with canonical lighting modes.
Friday Colloquium (FriKo) of the Max Planck Institute for Biological Cybernetics, in Tübingen, Germany.