



Fan ZHANG

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

Birth Date: 13-06-1989
Mobile phone: +31 (0) 6156 48 126
E-mail: vanzh89@gmail.com
LinkedIn: [fanzhang1989](https://www.linkedin.com/in/fanzhang1989)
Address: Graslinnen 35, Eindhoven, NL
Website: fzhang.me

BACKGROUNDS

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|---------------|---|-----------------|
| 11/13-present | Delft University of Technology | The Netherlands |
| | 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> | |
| | <ul style="list-style-type: none">• 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 such as light and shape.• Achievements:<ul style="list-style-type: none">○ 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:<ul style="list-style-type: none">○ Psychophysical experiments using novel interactive interfaces○ Image processing for datasets of scenes varying parametrically○ Image processing for identifying the sensory cues○ 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• Currently working as a post-doc, collaborating with P&G in a UX research project | |
| 09/12-09/13 | King’s College London | UK |
| | M.Sc. in Robotics | |
| | <ul style="list-style-type: none">• Graduate with Distinction• Focus: Computer Vision/Machine Learning• Thesis: <i>A Neural Network for Solving the Stereo Correspondence Problem</i>. 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 | |
| | <u>Chinese-English Bilingual Program</u> | |
| | <ul style="list-style-type: none">• Focus: Computer-aided Manufacturing and Design• Thesis: <i>The Identification of Tool Cutting Condition Based on AE (Acoustic Emission) Signal</i>. 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

- 04/16-11/18 **Visual optimization for material appearance** France
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
- 02/15-05/15 **Prototyping and experiment** Germany
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, OpenGL(GLSL)
Design and Engineering:	Photoshop, 3D modelling/rendering software such as Blender, MaxwellRender, AutoCAD, etc.
Language:	Mandarin Chinese (native); English (proficient)

PUBLICATION LIST

- Journal Paper Zhang, F., de Ridder, H., Barla, P., & Pont, S. (under review).
Effects of light direction and shape on the visual perception of canonical materials.
Submitted to peer-reviewed journal for publication.
- Zhang, F., de Ridder, H., Barla, P., & Pont, S. (in press).
A systematical approach to testing and predicting light-material interactions.
Accepted by Journal of Vision
- Zhang, F., de Ridder, H., & Pont, S. (2018).
Asymmetric perceptual confounds between canonical lightings and materials.
Journal of Vision, 18(11), 1-19. doi:10.1167/18.11.11
- 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.
- Conference Abstract Zhang, F., de Ridder, H., Barla, P., & Pont, S. (2017).
Material dependent appearance effects brought out by natural light environments.
Poster session presented at European Conference on Visual Perception (ECVP), Berlin, Germany
- Zhang, F., de Ridder, H., van Egmond, R., & Pont, S. (2017, Talk).
The interplay between material qualities and lighting.
Journal of vision, 17(10), 228-228. doi:10.1167/17.10.228
- Zhang, F., de Ridder, H., & Pont, S. (2016, Poster).
Canonical Material and Illumination Confounds.
In *PERCEPTION* (Vol. 45, pp. 130-130).
- Zhang, F., de Ridder, H., & Pont, S. (2016, Poster).
Can people match optically mixed canonical lighting modes?
Journal of Vision, 16(12), 642-642. doi:10.1167/16.12.642
- Zhang, F., de Ridder, H., & Pont, S. (2015, Poster).
Matmix 1.0, a novel material probe for quantitatively measuring visual perception of materials.
Journal of Vision, 15(12), 824-824. doi:10.1167/15.12.824
- Zhang, F., de Ridder, H., & Pont, S. (2014, Poster).
Towards an interactive probe for material studies.
In *Proceedings Experiencing light 2014: international conference on the effects of light on wellbeing, Eindhoven, The Netherlands, 10-11 November 2014* (p. 119).