Fan ZHANG

Date of birth: 1989/06/13
Email: vanzh89@gmail.com
Phone: +31(0)615648126
Address: Graslinnen 35, Eindhoven
Nationality: Chinese
Visas: Dutch Residence Permit

EDUCATION BACKGROUNDS

11/13-11/18 **Ph.D. in Perceptual Intelligence**
Delft University of Technology The Netherlands
Human Information Communication Design Section, Industrial Design Department

- Promotors: Prof. Huib de Ridder, Prof. Sylvia Pont [PRISM - EU Marie-Curie ITN (FP7)]
- Thesis**:** *On Probing Appearance: Testing Material-Lighting Interactions in an Image-based Canonical Approach*

09/12-09/13 **M.Sc. in Robotics**
King's College London United Kingdom

- Graduate with Distinction
- Thesis: *A Neural Network for Solving the Stereo Correspondence Problem*

09/07-07/11 **B.Eng. in Mechanical Engineering and Automation**
Shanghai Jiao Tong University China

- Thesis: *The Identification of Tool Cutting Condition Based on Acoustic Emission Signal*

RESEARCH EXPERIENCES

12/19-12/22 **Research Fellow in Cognitive Robotics**
University of Birmingham United Kingdom

- Aim: model and explain the neural mechanisms in attention and action planning
- Personal focus:
  - Build cognitive robotics model that could simulate human vision and arm control (MATLAB object-oriented programming, RNN, CNN, DNF)
  - Optimize model performance using parallel computation algorithms in high performance clusters for fitting, simulation, visualization, and data analysis
  - Integrate robot vision and arm control in complex tasks (LEGO arm robot, ROS)
  - Build graphical user-interface for human-robot interaction (MATLAB GUI)
- Metrology: novel regression model for analyzing continuous robot-arm trajectories
- Establish laboratory experiments (vBot robotic manipulandum) and online testing programs (JavaScript, Google Firebase)
- Teach and supervise MSc/BSc students (e.g. programming, statistical analysis)

12/18-07/19 **Postdoc Researcher Product Design/Consumer Knowledge**
Delft University of Technology The Netherlands
Procter & Gamble Germany

- Measure customer's multisensory experience of P&G's products
  - Create video demo that convey multisensory information for the products
  - Design testing interface for measuring customer's visual-tactile perception
  - Represent product premium-ness as a function of physical attributes
- Provide guidelines for improving the empirical product design process
- Deliver novel interactive programs for P&G's future mobile apps development

INTERNATIONAL COLLABORATIONS AND SIDE PROJECTS

12/20-12/21 **Cognition and modelling** United States

Remote Collaboration with Brown University

- Fit human data with computational modelling approach to understand how history of human behavior biases current visual attention and hand reach movement

04/16-11/18 **Optics-based modelling and computer graphics** France

Secondment at INRIA Bordeaux Sud-Ouest

- Optimize light-tracing reflectance model for material properties
  - Develop prototypes of canonical surface reflectance (material) modes and lighting modes using optics-based computational models (OpenGL shading)
  - Develop a protocol to test complex material-lighting interactions
  - Propose novel high-order spherical harmonics lighting metrics Validate predictions of lighting effects for canonical reflectance modes

02/15-05/15 **Reflectance modes prototyping** Germany

Secondment at University of Giessen

- Prototype image-based models in 3D modelling and computer rendering
- Design and program testing interface for measuring car coating gloss, in collaboration with a local coating company

Workshops, Focus Groups, and Trainings

JLU Giessen	Teach Psychophysics (postgraduate level)
KU Leuven	Monkey Electrophysiology
University of Cambridge	fMRI/EEG experimental design and data analysis
Next Limit Technology	3D modeling and computer rendering
ENS Paris	Modelling psychophysical data in R

PROFESSION SKILLS

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

GRADUATION THESIS SUPERVISION

MSc Computational Neuroscience and Cognitive Robotics	2 graduated, 3 on going
BSc Psychology	5 graduated
BSc Neuroscience	1 graduated

TEACHING ACTIVITY

09/20-present	MSc Computational Neuroscience and Cognitive Robotics Module - Practical Research Skills

PUBLICATION LIST (https://scholar.google.com/citations?user=n7mACQEAAAAJ)

Pre-print

Continuous action with a neurobiologically inspired computational approach reveals the dynamics of selection history
Makwana, M.[1], Zhang, F.[1], Heinke, D., & Song, JH. (2022).
https://doi.org/10.31234/osf.io/8xgbm

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 Proceedings

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).
FriKo, at the Max Planck Institute for Biological Cybernetics, in Tübingen, Germany.

The interplay between material qualities and lighting.
Zhang, F., de Ridder, H., van Egmond, R., & Pont, S. (2017).
Talk at 2017 Visual Science Society Annual Meeting
Journal of vision, *17*(10), 228-228. doi:10.1167/17.10.228