Material depictions and perceptions in paintings, engravings and generative AI

Maarten Wijntjes — Delft University of Technology

While a photograph or computer rendering contains all visual information, a painting only contains the information needed to evoke a percept. The process underlying photography or rendering is categorically different from painting as photography and rendering involves distal information of the scene (the so called 'world' data), while the process of painting merely involves proximal information: the brush strokes directly stimulate the percept. Although this direct relation between painterly techniques and perception is interesting, the lack of distal information (the ground truth) also limits the usage of paintings as stimuli. Another challenge of using paintings as stimuli is the lack of control: every artist creates different paintings representing different subject matter depicted in various styles.

In this talk I will present various studies on material depiction in art history and how we cope with the challenges of the lack of 'world' data and the lack of control. We will discuss the depiction of glossiness and translucency across a variety of subject matter: grapes, lemons, apples, fabrics, and sea waves. Furthermore I will address the influence of medium on material depiction in a study comparing paintings and their reproduced engravings. Finally, I will extent this account to generative AI, which essentially works similar as the artist does: directly applying proximal information on a 2D 'canvas'.

How sustainability drives innovation and impacts perception - tales from industry

Frank J. Maile — Schlenk Metallic Pigments / Pforzheim University

The presentation will provide an insight into three selected topics that pose major challenges for the industry. These are triggered by the rapidly changing regulatory requirements and the issue of sustainability. To give a concrete example, here is some background information and questions: Design for recyclability is very important for companies active in consumer goods markets in order to maintain and now also enhance their brand and CMF design. Success in this context is based on an appropriate combination of technological and technical knowledge and requires a complementary creative design process. One main question (in relation to perception) that frequently arises in this context is: *Why are effect finishes attractive to consumers?* The more recent and important question in context with sustainability is: *What challenges do metallized parts pose for the recyclability of consumer goods?*

Facial appearance measurement, reproduction and preference

Kaida Xiao — University of Leeds

Face is identity. There has recently been resurgence in interest in facial appearance, driven by several different technologies and application areas where accurate measurement, perception, and reproduction are key factors. This presentation will explore various research works, including the comprehensive knowledge of the range of skin tones that exist, skin colour measurement and database recommended by CIE TC 1-92, an understanding of how skin tones vary and how people perceive these differences, colorimetric and spectral reproduction for facial image on display and the relationship between appearance and preference in a wide range of viewing conditions.

***21.10.2024** – ÚTIA AV ČR, Pod Vodárenskou věží 4, room 3*

3nd Workshop on Perception of Material Appearance

Monday 21/10/2024

09:30-09:40 – Welcome & introduction

SESSION 1 _____

09:40-10:20 – INVITED TALK: **Maarten Wijntjes** (Delft University of Technology) – Material depictions and perceptions in paintings, engravings and generative AI

10:20-10:35 – **Filip Děchtěrenko** (Institute of Psychology, The Czech academy of Sciences) – Perception of material categories

10:35-11:00 – Coffee Break

SESSION 2 _____

11:00-11:30 – INVITED TALK: **Frank J. Maile** (Schlenk Metallic Pigments GmbH, Pforzheim University) – How sustainability drives innovation and impacts perception - tales from industry

11:30-12:00 – **Jiří Filip** (UTIA, The Czech academy of Sciences) – Material Fingerprinting: Identifying and Predicting Perceptual Attributes of Material Appearance

12:00-13:30 – Lunch Break

SESSION 3 _____

13:30-14:10 – INVITED TALK: **Kaida Xiao** (University of Leeds) – Facial appearance measurement, reproduction and preference

14:10-14:40 – **Roland W. Fleming** (University of Giessen, Germany) – Perception of deformable materials

14:40 – Coffee + lab tour (UTIA robotic goniometer) = end of the workshop

You are welcome to attend. Please indicate your planned attendance by sending email with subject „WPMA“ to **filipj@utia.cas.cz**