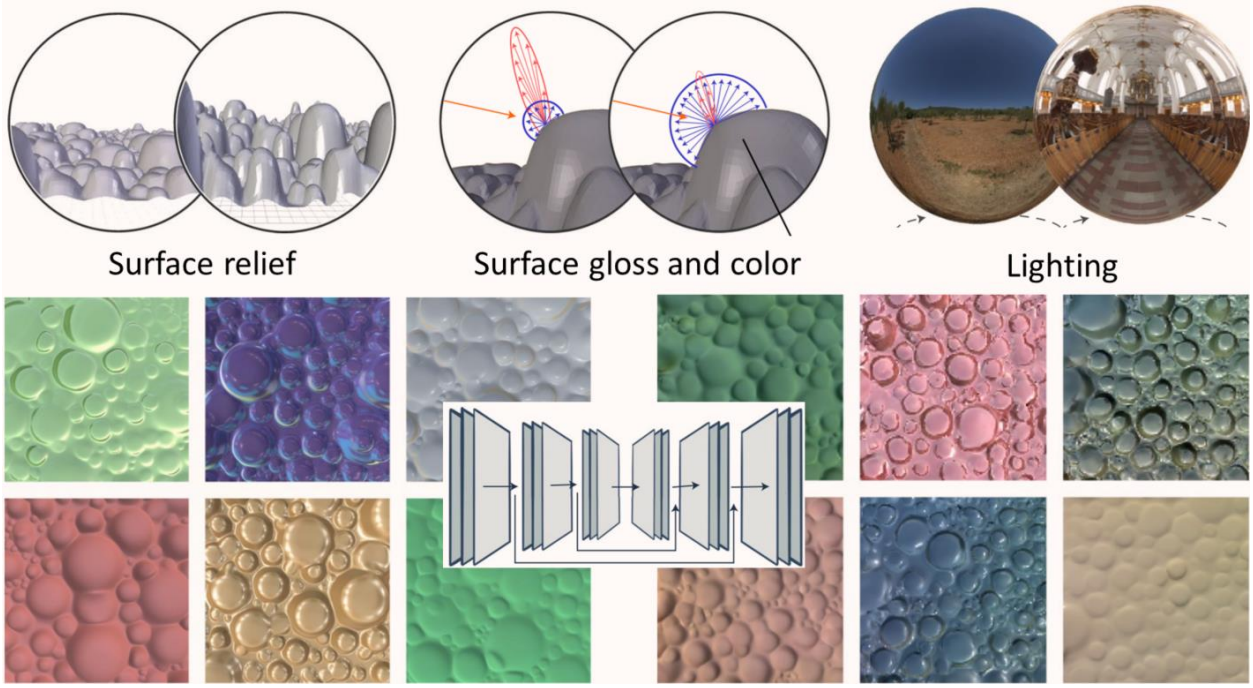
14.6.2022, 10:00 *– ÚTIA AV ČR, Pod Vodárenskou věží 4, room 474*

Learning to See Stuff: Modelling Human Perception with Unsupervised Deep Learning

Roland W Fleming *Justus Liebig University of Giessen, Germany*

Humans are very good at visually recognizing materials and inferring their properties. Without touching surfaces, we can usually tell what they would feel like, and we enjoy vivid visual intuitions about how they typically behave. This is impressive because the retinal image that the visual system receives as input is the result of complex interactions between many physical processes. Somehow the brain has to disentangle these different factors. I will present some recent work in which we show that an unsupervised neural network trained on images of surfaces spontaneously learns to disentangle reflectance, lighting and shape. We find that the network not only predicts the broad successes of human gloss perception, but also the specific pattern of errors that humans exhibit on an image-by-image basis. We argue this has important implications for thinking about vision more broadly.



Workshop on Perception of Material Appearance

"It's not what you look at that matter, it's what you see."

Tuesday 14/06/2022

ÚTIA AV ČR, Pod Vodárenskou věží 4, room 474

09:00-09:10 – Introduction

09:10-09:30 – **Jiří Filip** (UTIA CAS) – *Challenges in creating a digital twin of material*

09:30-10:00 – **Michal Haindl** (UTIA CAS) – *Texture similarity criteria*

10:00-10:30 – **Roland W. Fleming** (University of Giessen) – *Learning to see stuff: Modelling human Perception with Unsupervised Deep Learning*

10:30-11:00 – Coffee Break

11:00-11:20 – **Jacob R. Cheeseman** (University of Giessen): *There's more to gloss than meets the eye*

11:20-11:40 – **Filipp Schmidt** (University of Giessen): *Core dimensions of human material perception*

11:40-12:00 – **Jiří Lukavský** (PSU CAS): *Measuring similarity of photographs*

You are welcome to attend, no registration is required.