exponential way. The exponential attenuation of the spectral power leads to a luminance decrease before entirely diminishing. It is less evident that higher-order light reflections' spectral shape simultaneously varies as a function of the number of bounces they went through, except for the achromatic surfaces with flat reflectance spectra. Via theoretical analysis, we found that the spectral changes are systematic shifts towards reflectance spectral peaks. Using computational simulation, we empirically demonstrated accumulated inter-reflections could induce statistical differences for the visual system to distinguish flat or convex metameric surfaces. We will next investigate how the human visual system exploits such a statistic when discriminating the surface reflectance. [Author Cehao Yu wants to acknowledge the funding received from the European Union's Horizon 2020 research and innovation programme (grant no. 765121; project "DyViTo").]

Perception of CCT in cyan spectra composed light emitting diode white source

Davis Zagers & Sergejs Fomins
Kengaraga iela 8, Riga, Latvia
Email: sergejs.fomins@lu.lv

Modern LED technology relies on the gallium nitride properties with pronounced blue spectra at around 460 nm, which is largely present in most of LED white light sources. Light and especially blue spectrum have a proven role in the management of non-visual physiological functions, for example, in the regulation of the circadian cycle. In our approach we tend to minimize the use of blue light by replacing it with the mixture or cyan spectrum. Multichannel LED source (Red, Amber, Green, Cyan1, Cyan2, Blue1, Blue2) was developed with emphasis on blue and cyan spectral representatives. Experimental procedure was lightness (300, 600, 900 lx) and correlated colour temperature (3K, 4K, 5K,6K, 6.5K Kelvin) matching to the reference source. Results obtained on the group of young naïve subjects indicate that cyan spectra edition to the same CCT white source have no impact of the perceived lightness. However, lowering the blue spectra with addition of cyan part significantly impact the perception of CCT.

Appearance of alpha rhythm as a predictor of visual information processing in working memory

Stanislav A. Kozlovskiy & Anton O. Rogachev
Faculty of Psychology, Lomonosov Moscow State University, Moscow, Russia
Email: s_t_a_s@mail.ru

We studied brain activity in alpha-band during retention of visual characteristics in visual working memory. The subjects (N=10, age=21.5±0.7) were presented with complex shapes like blots (8 variants), colored in different colors (9 variants), which they were asked to remember. A cue was then presented, which tasked the participant to recall the color, shape or both and remember it. After a pause of 2000 ms, a test stimulus was presented. The subject had to answer whether the retained characteristic of the remembered stimulus coincided with the test stimulus. EEG (60 channels) was recorded; Morlet wavelets were calculated in Brainstorm (Tadel, 2011). We analyzed 2000 ms after cue presentation. We found alpha-activity 700-1300 ms after cue when comparing the color of the perceived stimulus with the color in memory. When comparing the shape of the stimulus with the memorized shape, alpha-activity occurred at 1400-1600 ms after cue. Finally, in the series that required comparing both the shape and color of the stimulus and the memory image, alpha-activity occurred at 1100-1300 and 1500-1700 ms. It was shown that the number of alpha rhythm appearances coincided with the number of different characteristics of the visual stimulus in memory that the subject was required to pay attention to. Thus, we hypothesize that the appearance of alpha rhythm when the eyes are open may be evidence of a temporary disabling of visual information processing in the primary visual cortex at moments when the subject is analyzing an image in visual memory. [Funded by Russian Science Foundation (RSF), project 19-18-00474.]

Neural model for social interactions recognition from abstract and naturalistic scenes

Albert Mukovskiy[1], Mohammad Hovaidi-Ardestani[1], Alessandro Salatiello[1,2], Michael Stettler[1,2] & Martin A. Giese[1]
[1]Section for Computational Sensomotorics, Hertie Institute for Clinical Brain Research/ CIN, University Clinic Tübingen, Tübingen, Germany
[2]IMPRS for Intelligent Systems, Tübingen, Germany
Email: albert.mukovskiy@medizin.uni-tuebingen.de

INTRODUCTION: Humans can interpret social interactions from schematic stimuli (Heider & Simmel, 1944). We present a simplistic neural model of the visual pathway that recognizes dynamic social interaction from naturalistic and abstracted scenes. We also present an algorithm for the generation of the controlled stimulus classes of dynamic social interactions, derived from dynamic models of human navigation (Warren, 2006). METHODS: The model consists of shape-recognition pathway, modeled by a Deep Neural Network (VGG16) for mid-level feature detection, followed by an RBF network that recognizes shape, orientation and position of moving agents. Agent position and orientation is tracked by a recurrent neural network (neural field). Combining a gain field mechanism and motion energy detectors, the (relative) positions, velocities and accelerations of the agents are computed, followed by a neural level that classifies interactive