Contribution ID: **19** Type: **Talk**

A Data-driven Approach to Characterizing the Spectral, Temporal and Spatial light Variations in the real world

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Light exposure significantly impacts various aspects of human psychology and physiology, including cognition, mood and circadian rhythm. The light in the real world has sophisticated characteristics; it is spatially articulated and temporally varying, even Changing the head direction and eye movement alter it. How the visual and non-visual light-mediated brain pathways encode these spatial and temporal variations is currently unknown.

A comprehensive multimodal measurement campaign is essential to gain a better mechanistic understanding of the sophisticated light patterns people encounter, thereby creating valuable information for diverse scientific and professional disciplines, including chronobiology, environmental psychology, architectural lighting design and building science.

This project aims to develop an extensive multi-dimensional dataset to map out indoor and outdoor natural scenes' spectral, spatial and temporal properties across a wide range of geographical and seasonal contexts. We collect a setup consisting of an imaging radiometer, Spectroradiometer, colorimeter, RGB and Depth cameras, Light loggers and a temperature logger. We carry on measurements throughout a day in measurement blocks with 30 minutes intervals. The critical point to make the best advantage of this dataset is creating an in-detailed metadata file comprising the list of all measurements, related IDs, and an organized set of environmental and categorical information.

A project in the RedCap platform makes it possible to gather all the valuable information as metadata. The measurement protocol employed in this study spans an entire day, commencing from morning and extending through evening hours. This approach involves the systematic acquisition of data, with each 30-minute interval constituting a discrete block of measurement encompassing all mentioned devices. A rich metadata entry is meticulously compiled for each of these measurement blocks. This metadata repository encapsulates a diverse array of essential information, including date and time stamps, geographical coordinates represented by longitude and latitude, records of the location, categorical descriptions of the scene view, lighting conditions, and an account of the prevailing weather dynamics. This meticulous assembly of metadata not only facilitates the contextual interpretation of measurement outcomes but also augments the reliability and robustness of the acquired data, ultimately enhancing the depth and accuracy of our analytical endeavors.

In order to ensure standardized and consistent categorization for critical factors such as weather conditions, scene views, and lighting, a structured approach has been adopted. This method involves the utilization of a curated dropdown selection mechanism, which draws from a list of conditions derived from authoritative scientific literature within the relevant field. The overarching objective is to streamline and enhance data classification's homogeneity, paving the way for more robust and insightful subsequent analyses. This selection of categories aims to minimize the potential for bias and subjectivity, and the resulting dataset becomes an even more valuable resource for comprehensive and accurate interpretation.

Please assign your contribution to one of the following topics

Metadata annotation and management close to the research process

Please specify "other" (stakeholder)

In addition please add keywords.

metadata, categorization, reproducibility, accessibility

Please assign yourself (presenting author) to one of the stakeholders.

Researchers

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Track Classification: Facilitating connectivity of research data: Metadata annotation and management during and close to the research process