ELSE

Emotions in Landscape Spaces Estimation

Background

In today's day and age, in order to give a comprehensive answer to human needs, attentions have been drawn to interdisciplinary studies. Landscape architecture is not an exception; neuroscience along with landscape architecture allows designers to reach a higher quality of space and leaves a desirable impact on users. Garland indicates that neuroscience, which is considered to be the science of life, can influence cognitive processes (e.g., memory and learning), perception, mobility, and emotions.

In the neuroscience field, analyzing brainwaves, hidrosis, heart rate, respiration rate, and such body functions is more precise than questionnaires. This analysis can draw designers' points of view nearer to users' mindsets. This gap reduction is vital because if landscape designers dismiss the differences in users' perceptions, emotions, and cognitions, unfavorable impacts will be left on users which directly affect their quality of life.

Based on studies regarding this science, environmental elements (e.g., the number of green spaces, trees, blue space, colors, forms, materials, and light) directly influence users' emotions which mandates the investigation of this influence. For instance, when designing a playground for children with the aim to improve their intelligence, curiosity, and learning, investigating the role of the environment on children's emotions becomes crucial. However, the absence of software that would scrutinize the impact of an environment on users' emotions is evident.

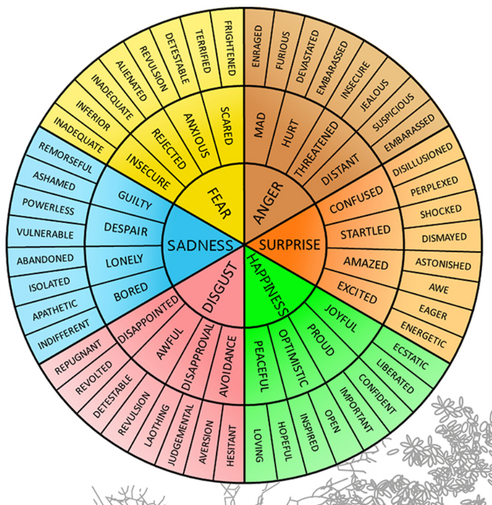
Software

ELSE's database contains research data regarding the neuroscientific impacts of environments. This software can analyze users' emotions (of different ages, genders, and cognitions) by simulating the designed space. Files with different formats from other 3D software can also be imported. Besides, it can be used as a plugin to develop other software.

Validation of the software's output regarding the user's emotions can be done by utilizing neuroscientific methods while the user is immersed in virtual reality (VR) space.

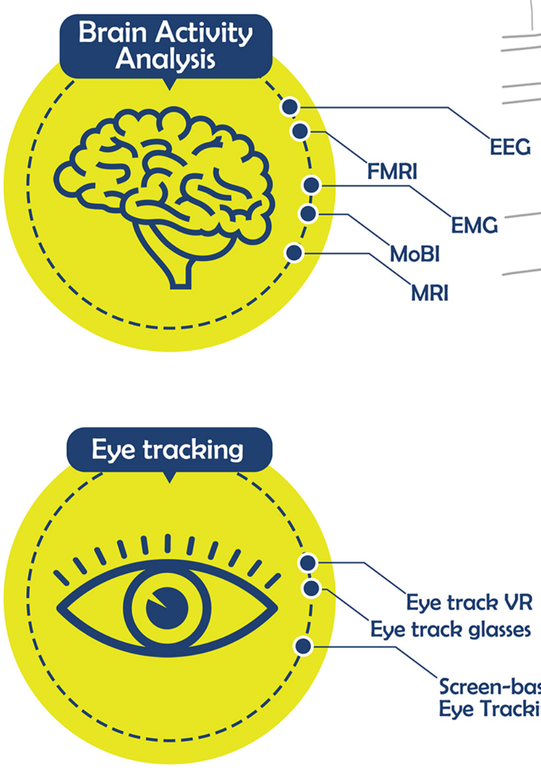
Goals of ELSE

1. Emotional evaluation of a landscape design.
2. Assessments of six basic emotions in landscape environments.
3. A practical research tool regarding NeuroArchitecture.

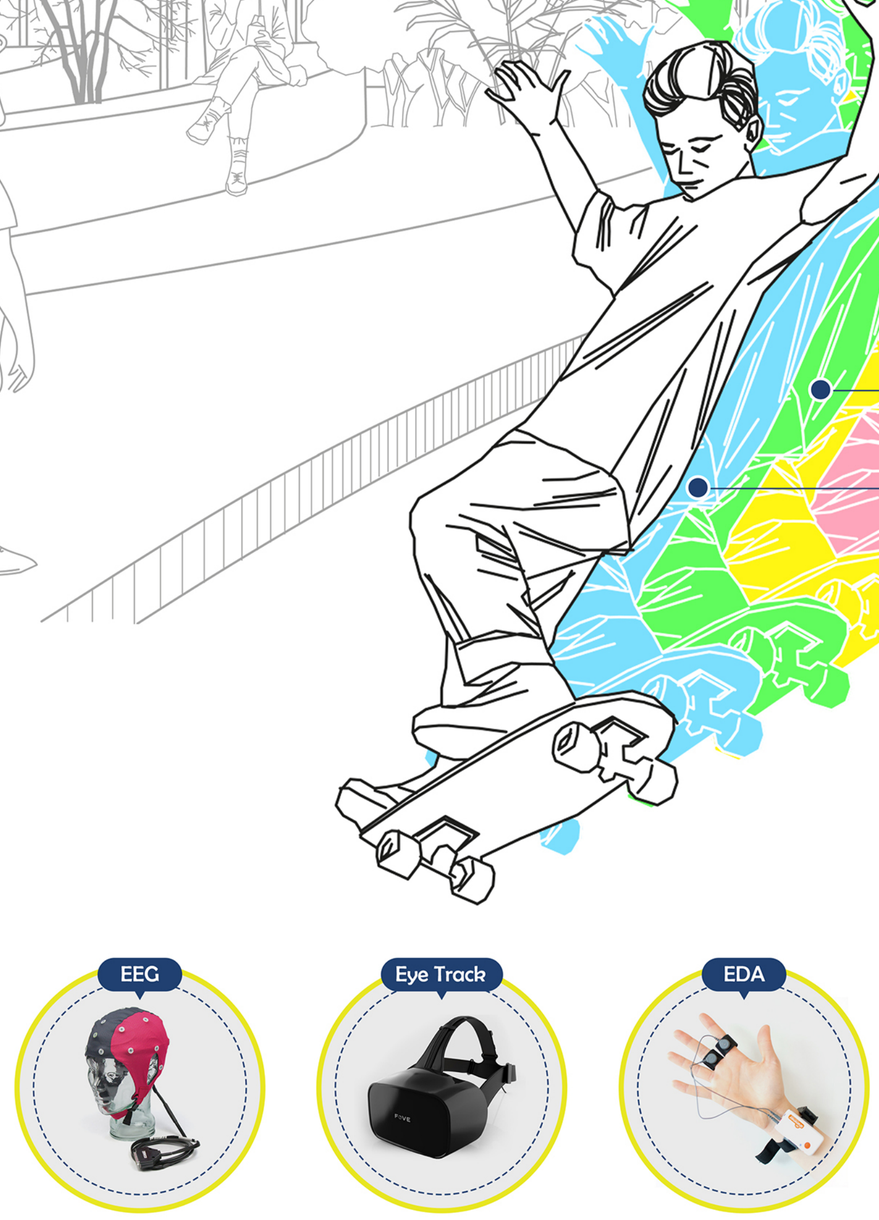


Psychological emotion wheel

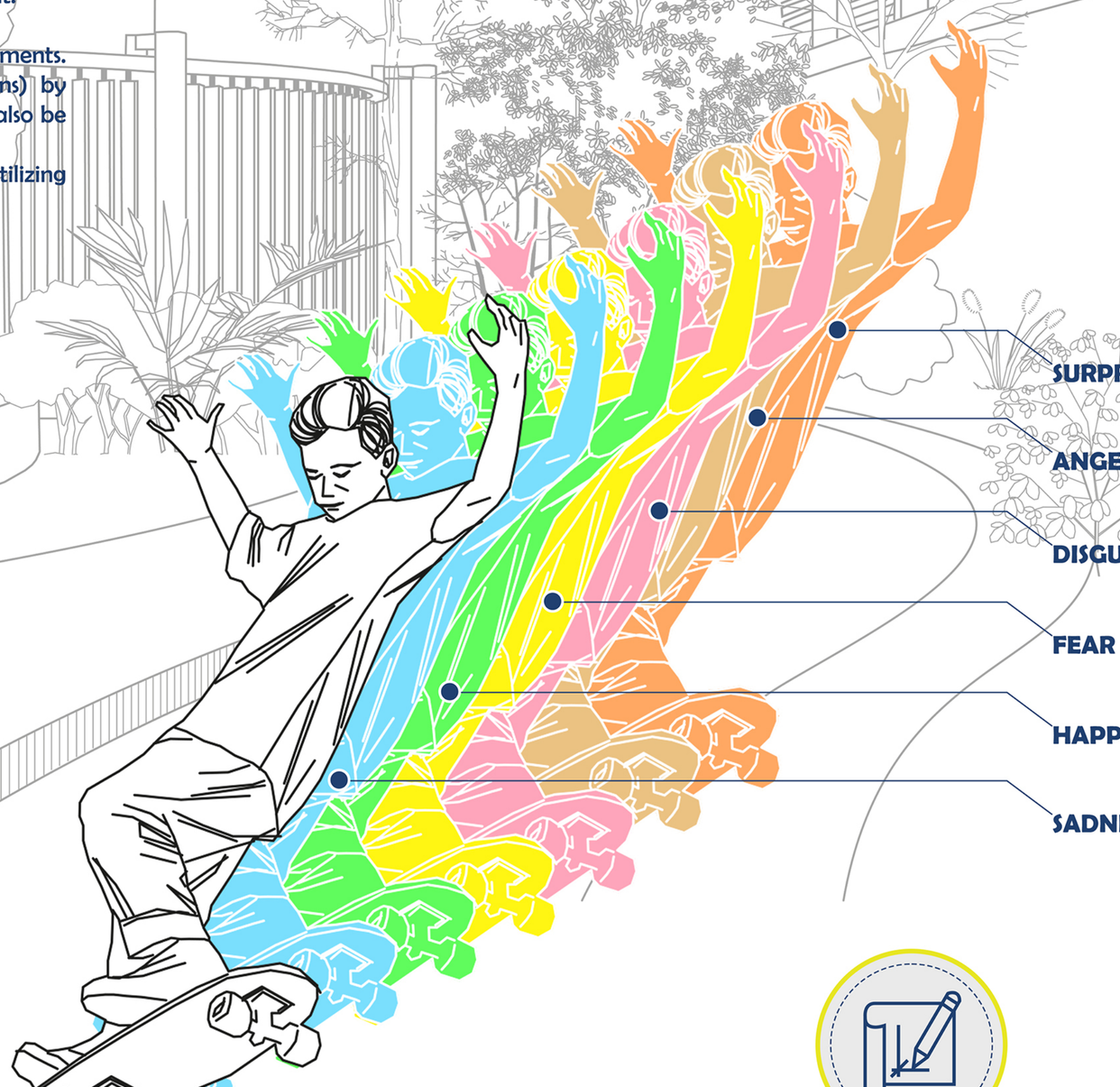
An emotion wheel is a circular graph that depicts the range of human emotions and how they relate to one another. The wheel in use has six core emotions at the center, including happiness, sadness, surprise, anger, disgust, and fear).



Questionnaire
BDI: Beck Depression Inventory
VR
Simulation of the designed space



EEG measures brain electrical activity, EDA measures skin conductivity to indicate emotional arousal and stress, and Eye tracker measures eye positions and eye movement.



Software Development Sample