



# ANFA 2014 CONFERENCE

**PRESENTER ABSTRACTS**  
ACADEMY OF NEUROSCIENCE FOR ARCHITECTURE

# Wearable Neuroimaging and Emotion: Investigating Emotional Responses to Architectural Environments with Functional Near-infrared Spectroscopy (fNIRS).

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## 1. ABSTRACT

Supported by contemporary theories of architectural aesthetics and neuro-aesthetics this paper presents a case for the use of portable fNIRS imaging in the assessment of emotional responses to spatial environments experienced by both blind and sighted. The aim of the paper is to outline the implications of fNIRS for spatial research and practice within the field of architecture, thereby suggesting a potential taxonomy of particular formations of space and affect.

Empirical neurological study of affect and spatial experience from an architectural design perspective remains in many instances uncharted. Clinical research using the portable non-invasive neuro-imaging device, *functional near infrared spectroscopy* (fNIRS) is proving convincing in its ability to detect emotional responses to visual, spatio-auditory and task based stimuli, providing a firm basis to potentially track cortical activity in the appraisal of architectural environments.

Additionally, recent neurological studies have sought to explore the manifold sensory abilities of the visually impaired to better understand spatial perception in general. Key studies reveal that early blind participants perform as well as sighted due to higher auditory and somato-sensory spatial acuity. For instance, <sup>face vision</sup> enables the visually impaired to detect environments through skin pressure, enabling at times an instantaneous impression of the layout of an unfamiliar environment. Studies also report pleasant and unpleasant emotional responses such as 'weightedness' or 'claustrophobia' within certain interior environments, revealing a deeper perceptual sensitivity than would be expected.

We conclude with justification that comparative fNIRS studies between the sighted and blind concerning spatial experience have the potential to provide greater understanding of emotional responses to architectural environments.

