Investigating methods for measuring face recognition under lamps of different spectral power distribution

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Abstract

Facial recognition is one of the interpersonal judgements carried out by pedestrians and road lighting should enhance the visual component of such judgements after dark. This article presents experiments carried out using two different procedures, identification and perceived recognition, to investigate why earlier studies led to inconsistent conclusions. For the identification procedure two observation durations were employed (1s, 8s). The two procedures led to similar conclusions regarding recognition ability at different distances. Review of these and past results suggests that an effect of lamp SPD will be found when the task is difficult, i.e. small size, brief observation, and correctly naming the target rather than picking a face from a sample.

1. Introduction

One intention of road lighting in residential areas is to provide pedestrians with a safe environment. Past studies have been carried out to investigate face recognition under different conditions of street lighting, in particular 1-5. It has been found that people would feel more comfortable if they were able to recognise approaching people by a minimum distance of 4 m. Although 4 m is the well-founded estimate of the minimum distance at which recognition should be expected, improving the distance for face recognition would contribute to an increase in safety. The use of a visual recognition system that integrates illuminance and face recognition, and their results suggest a non-linear relationship between semi-cylindrical illuminance (Ecc) and identification distance, with 0.4x Ecc required for identification at 4 m, approximately.

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