J Forensic Res 2016, 7:5(Suppl)
http://dx.doi.org/10.4172/2157-7145.C1.021

An easy and simple method to trace and identify footwear impressions

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Forensic investigators may encounter crime scenes that have shoeprints deposited on a variety of surfaces. The latent shoe prints are a key piece of evidence that can help find the suspect. Forensic Light Sources (FLS) have been used frequently in crime scene investigations as a scanning tool for crime scene evidence. LED based light sources are low in cost, portable, and easy to use; therefore, suitable for crime scene investigation and also are an excellent educational tool in forensic science classes. The Crime-lite 82L (Foster & Freeman) with white light (400-700 nm) is a high intensity FLS that provides a wide linear beam that is ideal for detecting surface debris in shoe prints in dust. During this research, we tested eight different surfaces - non-painted drywall, painted drywall, laminate flooring, linoleum, concrete, glass, wooden surface and slate and four different filters (red, green, blue, and yellow) mounted onto the white light to enhance contrast for floor residues while tracing footwear impressions. A large shoe print database (FPX; Foster & Freeman) was used to identify the make and model of over 190 shoe impressions successfully by tallying their discriminating features.

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The reliability of detecting digital photo alteration

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The present study is aimed to evaluate the reliability in using existing forensic methods to detect the possibility of digital photos being altered deliberately either to conceal evidence or to add misleading information. Does modern photographic technology make such detection more difficult? Does professional editing software such as Photoshop make such detection more unreliable? These questions are important to answer as they directly pertain to the credibility of digital evidence presented in court. We recruit forensic experts to examine a batch of digital photos in jpeg format, some of which have been deliberately altered digitally by a variety of software. The photos are generated from a variety of devices including cell phones of different brands and digital cameras of different brands. The experts are allowed to use whatever methods or tools at their disposal to determine which photos have been altered and more importantly what content has been altered. We then calculate the accuracy rate in these expert's efforts. The end is to explore whether a certain method is more reliable regardless of the expert and whether a certain type of device poses more challenges regardless of the expert. The preliminary findings do not bode well for the forensic community due to the low accuracy rates. For the most part, the expert's proficiency is not at fault. Rather, the true challenges seem to stem from the rapid advances of modern technologies in both the development of photography-related hardware and software.

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