PENN CENTER FOR INNOVATION

Non-contact Fingerprint Scanner

Latent fingerprint detection using non-destructive imaging

Inventor
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STATE OF DEVELOPMENT

- Prototype

INTELECTUAL PROPERTY

US Patent 7,489,391

DESIRED PARTNERSHIP

- License

REFERENCE MEDIA

Lin et al. (2006). Polarization-based and specular-reflection-based non-contact latent fingerprint imaging and lifting. Journal of the Optical Society of America, 23(9)

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Problem

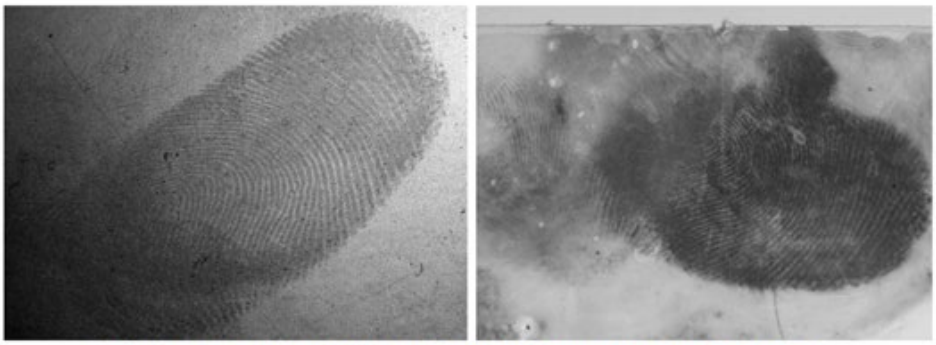
Latent fingerprints, the marks left by contact with a surface, have been used by forensic science since the 19th century. Often the fingerprints left on objects of interest are hard to detect with the unaided eye, and they may be only partial prints or of low quality. The current technique for extracting fingerprints involves applying a powder and removing the fingerprint with tape, this method, however, is destructive of the original fingerprint and may not work well on all surfaces.

Solution

Researchers at the University of Pennsylvania have developed a non-destructive imaging technique that can provide high-quality images of fingerprints suitable for forensic analysis without disturbing the original evidence. Light reflected from a surface is usually polarized at an angle, and this information can be used to perform analysis of surface discontinuities, such as the residue left by a fingerprint. Polarization imaging can help detect fingerprints that would not normally be visible, and do so with a high image quality. Because this technique is non-destructive and non-contact, important forensic evidence can be preserved for future analysis.

Advantages

- Non-contact, non-destructive technique
- No harsh solvents or toxic powders required
- Preserves evidence for additional analysis



The same fingerprint captured with the non-contact polarization imaging technique (left) and traditional dusting & lifting (right)