Personal Identification Based on Skin or Vein Pattern

[LAB0068 & LAB0143]

Background

- From criminal proceeding to homeland security cases, forensic methods are important, and sometimes crucial, to identifying criminals and victims.
- Law enforcement agents and forensic laboratories regularly use fingerprint, facial recognition, and DNA for identification.
- However, it may not be possible to use these measures when the only evidence available are photographs that do not contain a person's face, such as in the case of masked gunmen or child pornography.
- In 2014, publicly-funded forensic crime labs received 25,000 requests for the analysis of digital evidence.
- The digital forensics market is rapidly growing and projected to reach $9.7 billion in 2020 from $4.2 billion in 2017, a compound annual growth rate of 15.9%.
- The ability to identify individuals in faceless photographs would greatly improve the outcome of cases that involve digital evidence.

Innovation

- Lundquist Institute investigator Dr. Noah Craft has developed methods and software that use relatively permanent pigmented or vascular skin marks (RPPVSMs) or vein patterns to determine the probability of a person matching a unknown individual in a photograph.
- RPPVSMs can include nevi (moles), seborrheic keratoses, ephiledes (freckles), lentigos (Sun spots), and cherry hemangiomas since they are unique to specific individuals.
- Both RPPVSMs and vein patterns are considered powerful biometric traits because of their universality, permanence and distinctiveness. They are nearly impossible to forge.
- Dr. Craft's method includes comparing the patterns of RPPVSMs or veins between digital images and individuals, then calculating the probability of positive identification.
- The methods and software have been tested and validated.

Advantage

- Identify criminals, including perpetrators of child pornography or masked terrorists, when only photographs or videos that do not include their faces are available.
- Potential to positively identify missing people and assist in the identification of body or corpses when DNA or dental records are unavailable.

Applications

- Personal identification of suspects or victims in faceless photographs or videos

Lead Inventor

- Noah Craft, MD, PhD
    - Dr. Craft is an a board-certified dermatologist and experienced entrepreneur.
    - He is the CEO and co-founder of Science37, a company focused on improving the clinical trial experience. Science37 has received over $70 million in funding.
    - He also serves as a Senior Strategic Advisor to both VisualDx and Direct Derm.

For partnering opportunities and collaborations:
(310) 974-9301 • Keith.Hoffman@lundquist.org

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IP Status

- RPPVSMs (LAB0068)
  - U.S. Patent No. 8,787,625 issued July 22, 2014
  - U.S. Patent No. 9,152,867 issued October 6, 2015
  - U.S. Patent No. 9,607,231 issued March 28, 2017
- Vein pattern (LAB0143)
  - U.S. Patent No. 9,317,761 issued April 19, 2016

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