Ground truth: On certainty in forensic decision-making research

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Optimal decision making in forensics and policing relies on humans and technology. But it is unclear how experts interface with technology to make their decisions. Our approach in determining how best to implement new technology and procedures is to understand the judgement and decision-making processes undertaken by forensic professionals when they are evaluating evidence. When investigating these processes, we use the very same materials that professionals use in their investigations and training. But when using these authentic materials for forensic research, it is impossible to be absolutely certain that a piece of crime-scene evidence actually originated from the claimed source. That is, the ‘ground truth’ is incalculable. We are working to solve this problem by developing an open-source biometric repository to be accessed, free-of-charge, by forensic professionals and researchers worldwide. Several pieces of standardised biometric materials are taken from hundreds of participants where the ground truth of their origin is built into the system. The repository will contain fingerprints, palm-prints, shoe-prints, face photographs, video footage, handwriting samples, voice samples, and iris scans. Here we present results from experiments using these materials and show that the repository can be used as a valuable tool to support training and quality assurance.