Criminalistics Section

Louisiana State Police Crime Lab

Latent Print Comparison

Latents Unit

WHAT

Latent Print Comparison involves the comparison of friction ridge skin on the hands or feet to latent prints from crime scenes. Analysts visually analyze the quality and quantity of details in the latent (unknown) prints, and compare them to prints from known individuals to determine whether the latent prints can be identified or excluded.

HOW

Analysts in the print comparison discipline receive prints from outside agencies, as well as prints recovered from cases processed by the Crime Lab. Side by side comparison is made between the unidentified prints and reference prints from victims, suspects, officers, or other individuals who may have touched the evidence on which prints were developed. Analysts also utilize the state AFIS (Automated Fingerprint Identification System) and federal NGI (Next Generation Identification) systems to search unidentified prints against the repository of all known fingerprints and palm prints in these databases.

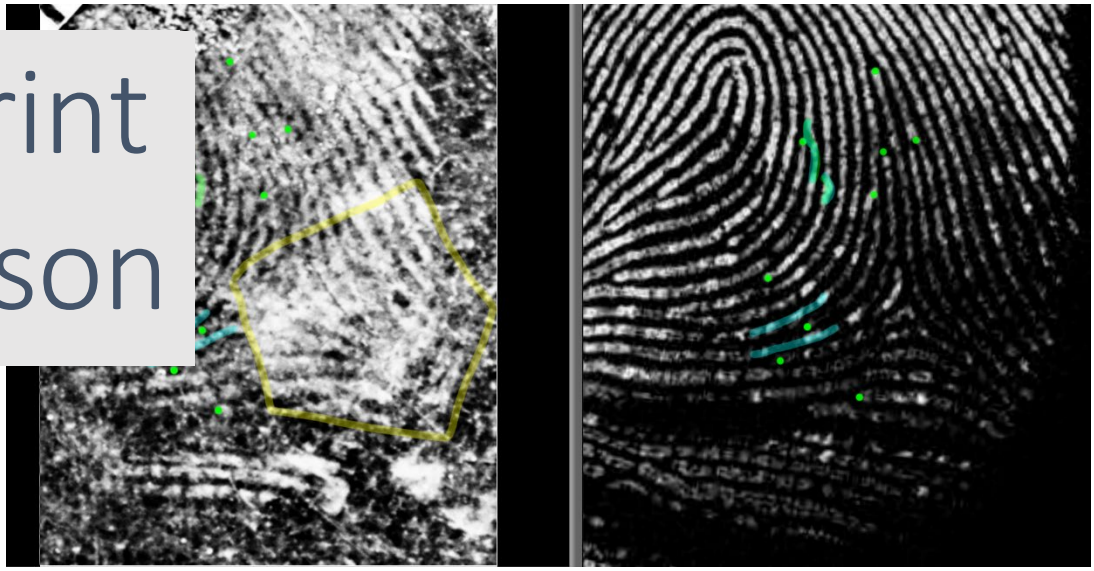
Analysts have multiple tools, both physical and electronic, to help them compare prints. A loupe is a tool commonly used to magnify prints during analysis and comparison. Analysts can also use computer equipment, such as Photoshop or other digital software, to enhance the clarity of prints, enlarge the images, or make the detail in the prints easier to see. The prints recovered from crime scenes are often very complex, exhibiting high levels of distortion, overlay, and other characteristics that can increase the difficulty of a comparison.

Analysts can also use databases to assist in determining who left a print. AFIS is the state fingerprint/palmprint database; it houses known print records from arrestees, juveniles, applicants, and law enforcement, in addition to unidentified latent prints from crime scenes. NGI is the federal print database, and houses these same types of records from all over the country. Prints can be searched through AFIS and NGI, and multiple candidates are returned for analysts to review and determine if any of them can be identified as the source of the unknown latent print.

WHY

The lab aids investigation by identifying or excluding individuals as the source of prints recovered from crime scenes. The presence of an individual's prints at a crime scene may not prove they committed a crime, nor does the absence of a person's prints at a scene prove their innocence; rather, this information is used by investigators in conjunction with other information collected in a case to determine whether, and by whom, a crime has been committed.

Latent Print Comparison



Staffing

Six analysts are currently authorized for testing, method development, technical and administrative review. One additional analyst outside the unit is authorized for casework and reviews. Five of these seven analysts are IAI Certified Latent Print Examiners. An additional technician is authorized for case prep and database searches.

Case Load

Approximately 650 cases per year. Cases submitted for latent print analysis often also have DNA requests associated with them. If a latent print identification is made, the DNA unit is notified; they have the opportunity to contact the case officer to determine whether DNA analysis is still needed.

Interesting Facts

Fingerprints patterns can be classified into three basic patterns—arches, loops, and whorls. Loops are the most common, making up about 65% of all patterns, followed by whorls at 35%, and arches at only 5%. These general patterns are used as a starting point for classification and identification, and are known as Level 1 detail. Level 2 detail refers to the individual minutiae observed in a print (ridge endings, bifurcations, dots, etc.), and Level 3 detail refers to additional ridge characteristics, such as creases, incipient ridges, pores, or ridge shape.

Latent print examiners use Level 1, Level 2, and Level 3 detail to determine the suitability of latent prints for comparison, entry into AFIS/NGI, or identification/exclusion. There is no "minimum number" of features needed to make an identification; it is the combination of Level 1, 2, and 3 detail in a latent print in correspondence with a known print that makes a print suitable for identification. Another important part of our analysis is exclusions—being able to determine who didn't leave a print is sometimes just as probative to an investigation as determining who did leave it.

No two people have the same fingerprints. The ridge detail on your hands and feet is different not only from other people but the detail on one finger, palm, toe, or foot sole is also different from all the other areas on your own hands and feet.

Identical twins have the same DNA, but different fingerprints.

The ridge detail on a person's hands and feet is formed in the womb around 12-24 weeks gestation. A person's genetics and their environment both play a role in development of the general pattern and of the individual detail in their fingerprints and footprints.

Fingerprints were once used as signatures on official documents, handmade earthenware, and other historic works of art. Multiple paintings by famous artists such as Pablo Picasso, J.M.W. Turner, and Jackson Pollock have even been authenticated by comparing partial fingerprints in the questioned paintings to those in known works by the same artists.