

## Post-Mortem Biometrics

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### Overview

The purpose of this research is to determine if commercially available biometric systems, specifically fingerprint and iris, can be utilized on post-mortem individuals. In the event that the identity of a decedent is unknown, it can be difficult for law enforcement to correctly identify the subject. Biometrics could be used if images captured met or exceeded the image quality threshold and the necessary features could be extracted from the image. To complete this research, the International Center for Biometric Research has partnered with the Lafayette Police Department.

### Iris Methodology

Using two iris scanners, we collected up to five samples of each iris at each of three settings of an autopsy. Specifically, the vitreous fluid is commonly sampled for toxicology testing. A lab technician would assist in fluid sampling and would hold the eye open for sampling.

#### Iris Capture : Setting 1

Capture 5 images of each iris with both devices. This is done with the subject as they entered the coroners office.



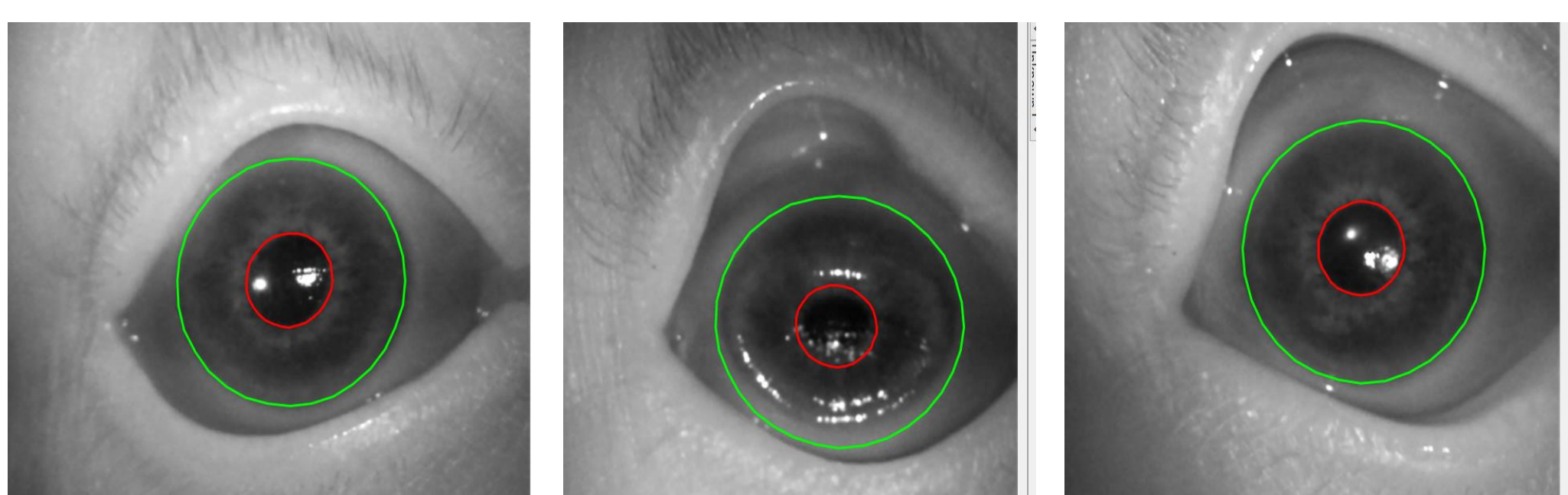
#### Iris Capture : Setting 2

Vitreous is sampled from the eye. This is a common autopsy procedure that can be used to create toxicology reports. Repeat five captures of each eye.



#### Iris Capture : Setting 3

A saline solution is injected into the eye in an attempt to replace the volume of vitreous previously sampled. Doing this reforms the shape of the eye. Repeat five captures of each eye.



Iris samples from left to right: Setting 1, Setting 2, & Setting 3

### Fingerprint Methodology

Using a single fingerprint scanner, fingerprint images were captured. The index finger and thumb were selected for sampling.

### Difficulties:

Fingers were often swollen or moist, causing the scanner to be unable to capture.

#### Fingerprint Capture

Captures were attempted on the thumb and index finger of the subject. If the capture was unsuccessful, a cloth was used to dry the finger and the capture was then re-attempted. Five captures were desired for each finger.



Example of post-mortem fingerprint samples

### Limitations

For both modalities, the subject pool was limited to those available at the Tippecanoe County Coroners office. It was not possible to obtain samples before death.

### Findings and Future Work

We have found that it is possible to obtain images that sufficient for matching purposes. For iris, we have found that the images from settings 2 and 3 will match to the original images from setting 1.

Future work will include continued samplings, as the sample size in the preliminary collection was not significant. It would be interesting to design a study allowing captures to be completed before death, in order to observe any changes that occur.