



## **Position Paper on Assigning Numerical Values to GYRO**

CanFRWG does not endorse assigning numerical values to the GYRO colour codes for use in the analysis phase or the comparison/evaluation phase of the fingerprint comparison process.

### Introduction

With the call for more rigorous documentation practices and more transparency of the ACE-V process, Langenburg and Champod (2011) proposed the GRYO method of minutia annotation. The GYRO method uses a green, red, yellow and orange colour coding system that indicates an examiner's confidence in the features existence and the quality of its reproduction of the friction skin. Many Canadian Law Enforcement agencies have adopted the GYRO<sup>1</sup> method of annotation, and GYRO is the methodology currently taught at the Canadian and Ontario Police Colleges.

In 2020, Henry Swofford and Jeremy John, attempted to adapt Langenburg and Champod's GYRO system for threshold determinations in their article; "Evaluating the Accuracy and Weight of Confidence in Examiner Minutiae Annotations"<sup>2</sup>. Swofford and John proposed a method of assigning numerical values to the GYRO colour codes at the analysis phase in the hopes of providing a more transparent metric for suitability determinations and quality control measures. In the article they suggested assigning 1 point for green, 2/3 point for yellow and 0 for red. They further suggest that this calculated score could then be used to establish a threshold for suitability or value determinations.

### CanFRWG Position

While CanFRWG supports the use of the GYRO method for annotating minutia, CanFRWG does not endorse assigning numerical values to the GYRO colour codes for use in the analysis phase or the comparison/evaluation phase of the fingerprint comparison process.

The GYRO markings are an indication of the examiner's confidence and not the specific value or weight that should be assigned to any one feature, as each minutia, regardless of its GYRO colour, will have different amounts of rarity. For example, not every yellow minutia will provide the same weight for an examiner making a suitability decision or forming an opinion on the fingerprint evidence. Moreover, assigning somewhat arbitrary values to represent the value of the minutiae and summing them is improper statistical practice, as values from non-interval scales such as the GYRO system should not be summed or averaged<sup>3</sup>. Therefore, a score created by summing values assigned to minutiae should not be used to determine where a comparison falls on the SWGFAST sufficiency graph or for making any suitability criteria.

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<sup>1</sup> Langenburg, G., & Champod, C. (2011). The GYRO system-a recommended approach to more transparent documentation. *Journal of Forensic Identification*, 61(4), 373-384.

<sup>2</sup> John, J., & Swofford, H. (2020). Evaluating the Accuracy and Weight of Confidence in Examiner Minutiae Annotations. *Journal of Forensic Identification*, 70(3), 289-309.

<sup>3</sup> Hockey, D., Dove, A., & Kent, T. (2021). Guidelines for the use and statistical analysis of the Home Office fingermark grading scheme for comparing fingermark development techniques. *Forensic Science International*, 318, 110604.