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Variation in Length of Signatures in Case of Simulated Forgery

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Abstract

Simulated or imitation forgery is one of the pervasive forgeries among the group of forgers, where genuine signature of signatory authority is available to forger and he attempts to execute by following the pictorial effect of the design of the signature by simply drawing the same. However, several factors are revealed during this act of forgery. Not every reproduction has a perfect evidence of poor line quality, retouching, and other "classic" features that may establish it as a fraud. Others, specifically those carried out when copying simple short signatures may have a line quality not very diverse from the signature and can be made without pen lifts, retouching, or tracing. In such cases, it may not be probable to opine with an extraordinary degree of confidence that the questioned writing is an imitation, but, according to its degree of inaccuracy, that exist, it may be apparent to postulate forgery.

Keywords: Simulated Forgery; Forensic Science; Handwriting Examination.

Introduction

Of the many complexities associated with the identification of handwriting, there is none more challenging than the 'wilful transformation' of writing [1]. Within the wide-ranging field of forensic science, the scientific examination of documents has one of the main purpose is to provide information about the history of document, its authenticity, its effectiveness for the assistance of legal proceedings. In the world of business and literacy most of the transactions takes place through documents. While, document is a piece of handwritten, type written, printed, or electronic script that predicts information and which serves as an official record or evidence, a questioned document is defined as any document whose authenticity is uncertain. There are several direct reasons due to which documents may have to be examined in criminal investigation.

A further cause for apparent resemblances occurring in conjunction with differences is that one of the parts of writing being compared is a simulation. Simulated signature is one that is not written in the name of the actual signatory and attempt has been made by them to copy or simulate the signature of another person [2]. The methods applied to imitate writing, mostly signatures, of other people. To prevent self-incrimination, a person may disguise their handwriting at the same time as fraudulently manipulating financial data or altering legal or other documents for financial gain or other personal benefit [3,4]. Whether the technique adopted by forger is a rapidly drawn copy, a

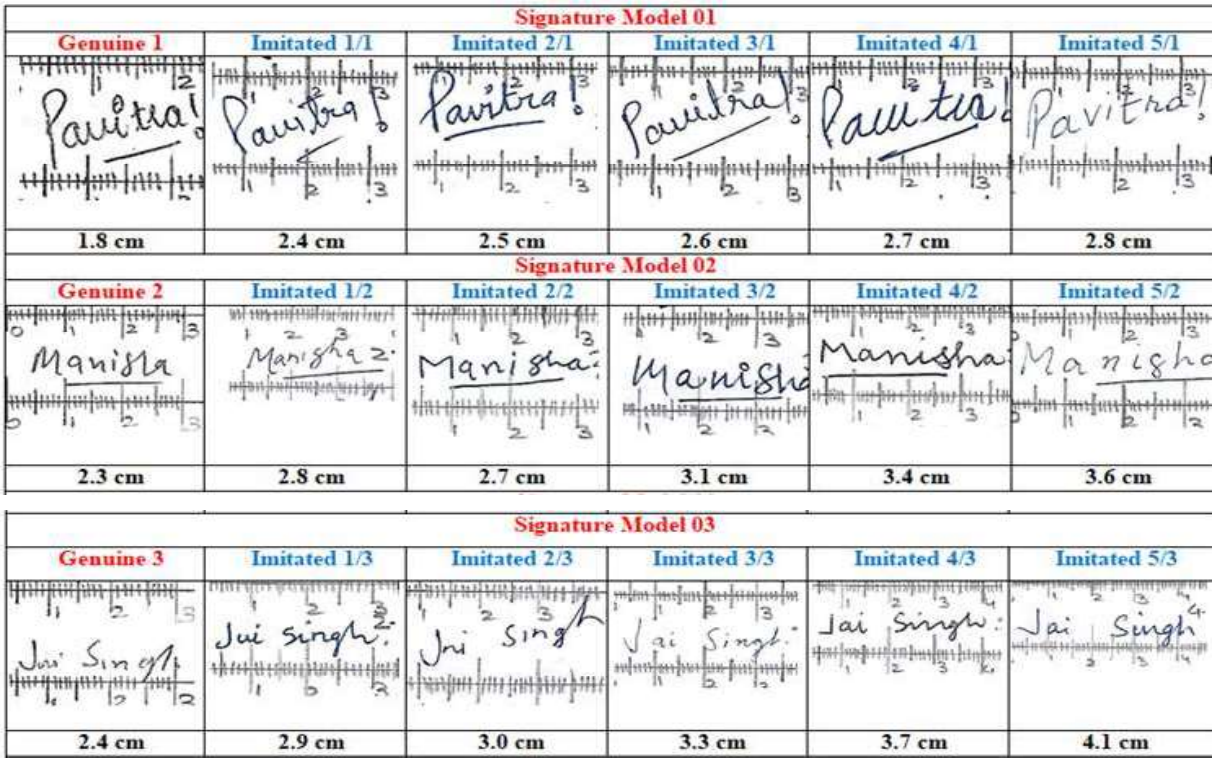
gradually developed freehand simulation, or a tracing, evidence will normally be found. In several cases, the pattern of such characteristics offers direct evidence that simulation has followed. The natural variations predominant in the writings of an individual can mislead as an evidence of imitation. If deficient samples of signatures are available for comparison, the entire range and freedom of variation cannot be appreciated by the examiner. This indicates that significant differences can be present due to imperfection in replication which could be variations as well. Another very similar confusing concept exists contradicting forgery is 'disguise'. There is little disagreement in the literature that the term 'disguise,' as it relates to handwriting, is taken to mean a deliberate distortion or modification of an individual's natural style of writing in an attempt to alter its appearance sufficiently to conceal the identity of its author [5,6,7]. An examination of the movement of the pen and the manner in which the writing was produced is 'highly significant' in determining the 'quality of naturalness or artificiality in writing' [8]. It is challenging to specify exact number of signatures required to establish the range of variation, although 10 specimens are collected over a period preferably including the time of the signature in question. Smaller number of specimen could be adequate if there is apparent evidence of simulation in the suspect writing or consistency of difference between a number of simulations and the genuine signatures.

When noteworthy dissimilarities typical of those exist when signatures or other writings are copied are revealed in a questioned signature, andare not existing in sufficient number of those identified to be genuine, it can safely be opined that the signature is not the genuine signature of the signatory authority [9,10,11]. If it also indicates a clear overall resemblance to the genuine signatures, it can be reported as a simulation with no indication that it was made by the authorized signatory of the genuine signature.

Methodology

Standard signatures were obtained from ten (10) healthy individuals irrespective of their age and gender. Each signature was attributed to at least one member of the standard group. Volunteer group containing eighty (80) individuals irrespective of their age were asked to replicate the ten accredited signatures leading to the procurement of eight hundred (800) imitated signatures. However, the gender ratio of the volunteer group was kept uniform as it contained forty (40) males and forty (40) females. Abundant time was allowed to the volunteers to replicate the genuine signatures which were analysed for the variation in their lengths. In order to study the variation of length of signature

Table 1: Sample Collection



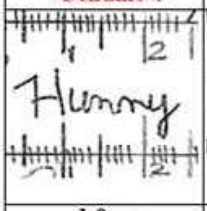
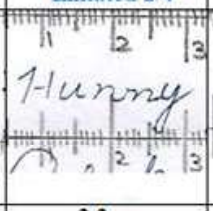
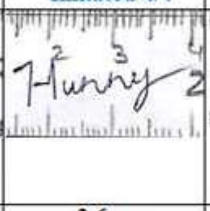
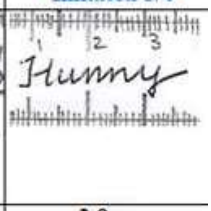
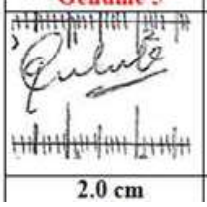
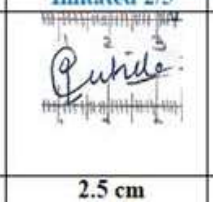
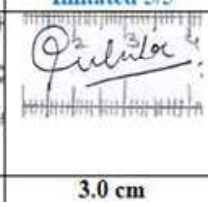
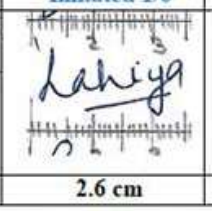
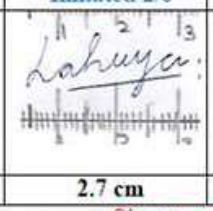
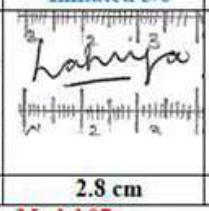
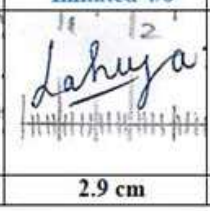
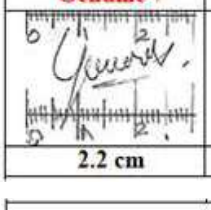
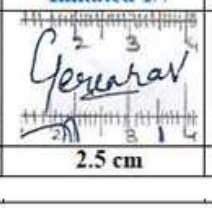
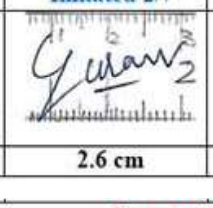
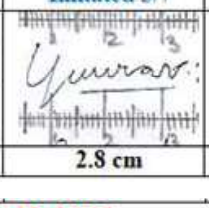
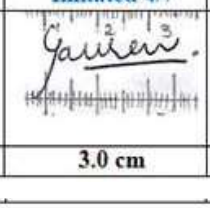
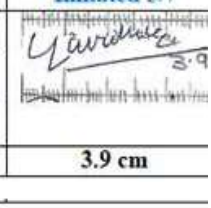
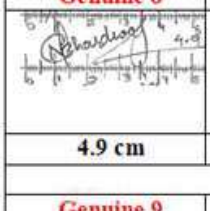
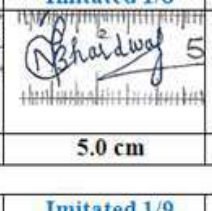
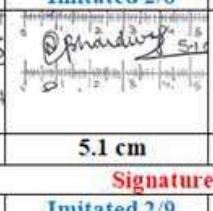
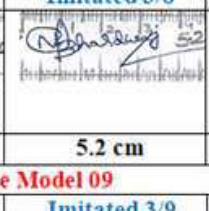
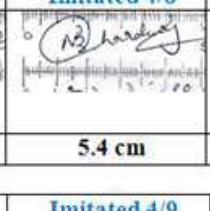
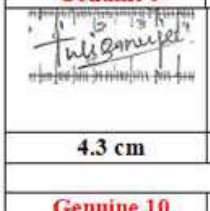
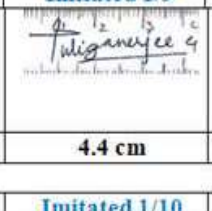
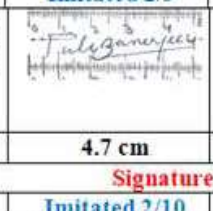
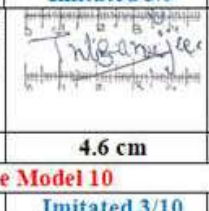
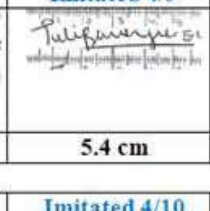
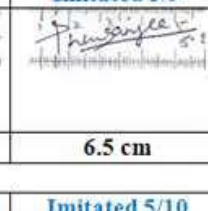
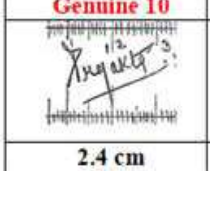
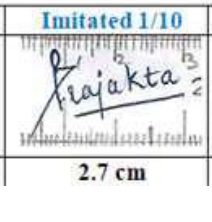
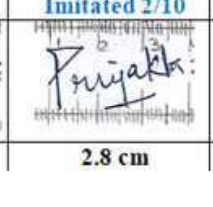
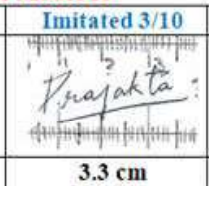
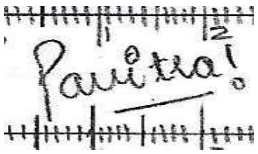
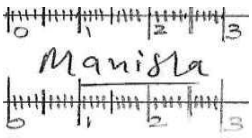
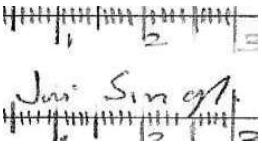
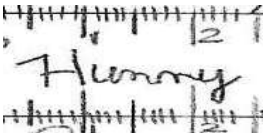
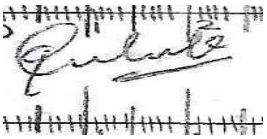
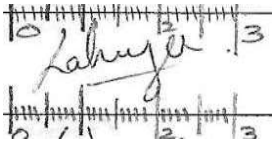
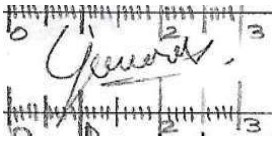
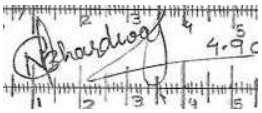
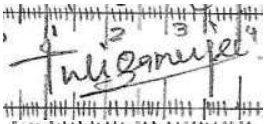
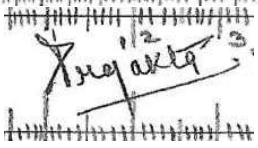
Signature Model 04					
Genuine 4	Imitated 1/4	Imitated 2/4	Imitated 3/4	Imitated 4/4	Imitated 5/4
					
1.9 cm	2.2 cm	2.3 cm	2.4 cm	2.6 cm	2.9 cm
Signature Model 05					
Genuine 5	Imitated 1/5	Imitated 2/5	Imitated 3/5	Imitated 4/5	Imitated 5/5
					
2.0 cm	2.1 cm	2.5 cm	2.7 cm	2.8 cm	3.0 cm
Signature Model 06					
Genuine 6	Imitated 1/6	Imitated 2/6	Imitated 3/6	Imitated 4/6	Imitated 5/6
					
2.5 cm	2.6 cm	2.7 cm	2.8 cm	2.9 cm	3.0 cm
Signature Model 07					
Genuine 7	Imitated 1/7	Imitated 2/7	Imitated 3/7	Imitated 4/7	Imitated 5/7
					
2.2 cm	2.5 cm	2.6 cm	2.8 cm	3.0 cm	3.9 cm
Signature Model 08					
Genuine 8	Imitated 1/8	Imitated 2/8	Imitated 3/8	Imitated 4/8	Imitated 5/8
					
4.9 cm	5.0 cm	5.1 cm	5.2 cm	5.4 cm	5.5 cm
Signature Model 09					
Genuine 9	Imitated 1/9	Imitated 2/9	Imitated 3/9	Imitated 4/9	Imitated 5/9
					
4.3 cm	4.4 cm	4.7 cm	4.6 cm	5.4 cm	6.5 cm
Signature Model 10					
Genuine 10	Imitated 1/10	Imitated 2/10	Imitated 3/10	Imitated 4/10	Imitated 5/10
					
2.4 cm	2.7 cm	2.8 cm	3.3 cm	3.7 cm	3.9 cm

Table 2: Mean values of the signatures*

	Standard signatures	Original length of standard signatures (cm)	Mean value for length of 10 samples of standard signatures (cm)
1.		1.8	1.8
2.		2.2	2.3
3.		2.4	2.4
4.		1.9	1.9
5.		2.4	2.0
6.		2.5	2.5
7.		2.2	2.2
8.		4.8	4.9
9.		4.5	4.2
10.		2.2	2.4

*This table shows the permissible instability of natural variation in the length perspective.
Total numbers of imitated signatures = 800

Percentage Value

% Change: (Calculated Value / Total Value) x 100
Therefore,

- % Increase in length = (538/800) x 100
  = 67.250%
- % Decrease in length = (203/800) x 100
  = 25.375%
- % Equal length = (59/800) x 100
  = 7.375%

of genuine writer, 10 samples from each writer were acquired. The measurements of these signatures are also taken into account by considering their mean value (Table 1 & 2).

Results& Discussion

Attempts have been made by the authors to identify the variation in length of simulated signature and for this purpose authors collected ten (10) genuine signature pattern and same have been imitated by eighty (80) individuals of equal gender distribution, i.e., forty (40) males and forty (40) females. The results showed that 67.250% individuals displayed increased length in simulated signatures, 25.375% shows decreased length and 7.375% did not show any noticeable change. The substantial prospect indicated that length of forged signature plays important role which could be taken into consideration for the purpose of comparison of handwriting. After examination, length analyses revealed that majority of the simulated signatures were increased in length with a percentage of 67.25%, while 25.37% were decreased and 7.37% remains almost unchanged in comparison to the standard samples (Table 3a,b).

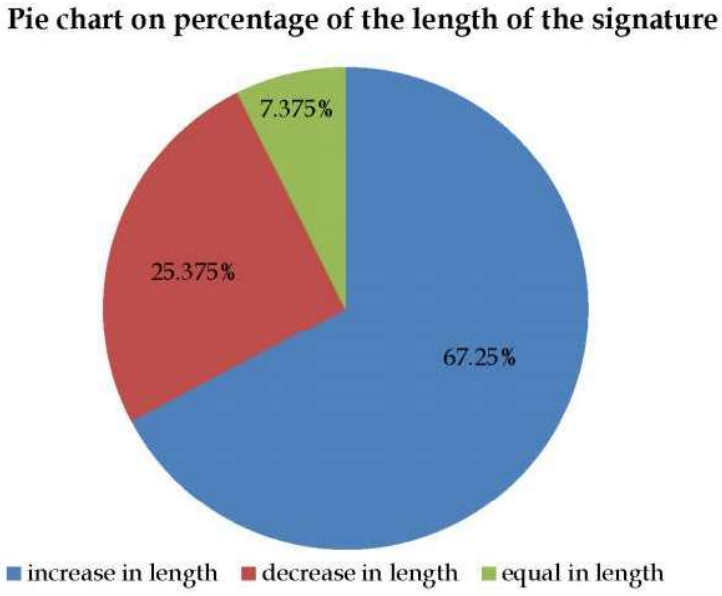


Table 3a: Result in Graphical Form

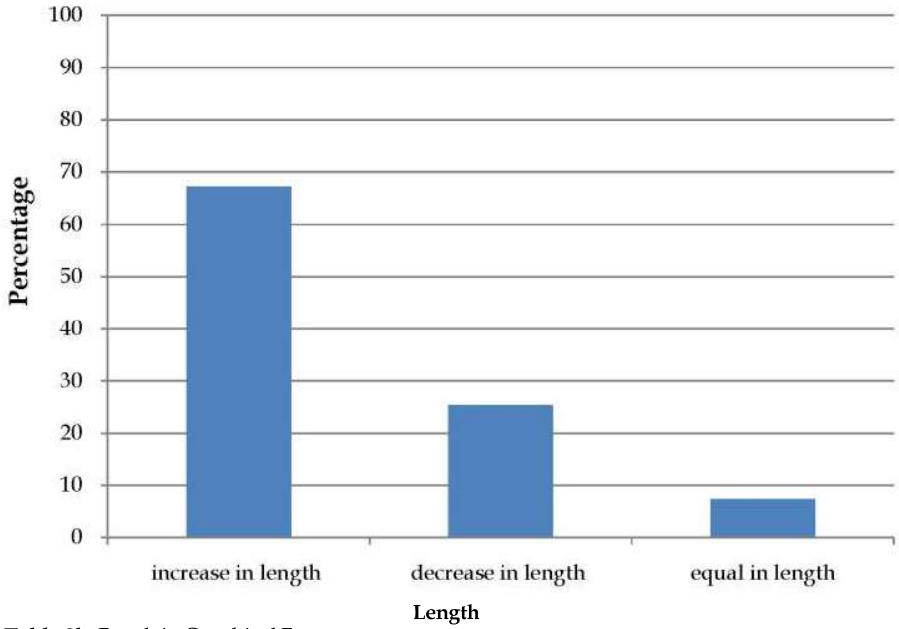


Table 3b: Result in Graphical Form

Conclusion

Detection of forged documents requires due vigilance on the part of expert. Some documents are more susceptible to alteration, and some business sectors or activities are riskier than others. This research article outlines one of the vital element of forgery i.e., length of signature for simulated signatures. It can be calculated as a primary method during the examination of simulated forgery. This makes the examination more effective as well as it should also be noted that all the signatures during the process of constructing juxtapose should be always scanned by keeping measuring scale adjacent to the each and every signature. This prevents alteration in dimensions caused by magnification process followed during the act of getting the various categories of signature i.e., Questioned, Admitted and Specimen adjacent to each other for the purpose of comparing signature by reducing error caused by movement of eye on various documents. The given study concludes that in majority of simulated forged signature, the forger increases the length of signature as compared to the specimen sample. Therefore, unusual increase in the length of the signature indicates signs of forgery. This study will help the document experts to distinguish between the forged or genuine signature and could be appreciated by the forensic community.

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