

# Perceived Strength of Signatures for the Prevention of Identity Theft

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## Abstract

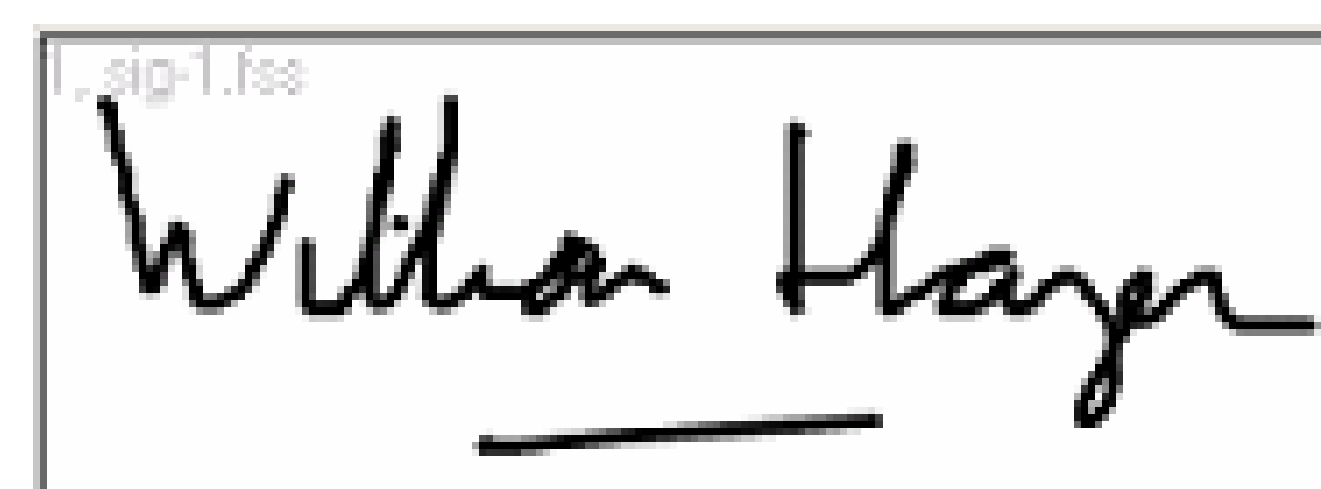
Dynamic signature verification is a subset of that larger science that includes fingerprint recognition, hand geometry, and voice recognition. Signature verification is primarily behavioral in nature like voice recognition, but has some very unique traits which make it harder to test and evaluate. These challenges include the fact that a signature is learnt, it contains variant measures, it can be changed by the owner of the signature, and that a signer might have several versions of the signature, depending on the intent of the signer.

Additionally, current applications for a dynamic signatures are usually in lieu of a paper and ink solution, and therefore the signature may not be verified at that specific moment (unlike the other biometrics), but may be validated at a later date. Furthermore, understanding an impostor distribution is also a challenge in the fact that other biometrics use a zero-effort attempt, “where an impostor uses his or her own biometric sample and claims the identity of a different enrollee” (WG1, 2005). Thus, dynamic signature verification is unique among other biometric authentication methodologies as there is no clear defined way of creating a forgery.

## Procedure

Two aspects of a forgery are examined – the first is the perception of the signature to forgery (how easy an individual perceives the signature to be forged), and the second is the amount of knowledge that a forger has about a signature. The dynamic variables of the signature were then examined to establish which statistical variables were susceptible to forgery using forensic tools. For dynamic signature verification, a zero-effort attempt would cause the forger to write their own name instead of that of the target. Another issue for the impostor is whether the signature is going to be easy or difficult to forge – the potential strength of that signature.

Signatures were redistributed for individuals to rank according to difficulty of forgery and to include reasons on why certain signatures would be difficult to forge. The data was coded to allow for analysis of patterns which indicate what traits make signatures easy to forge vs. traits that make them difficult. Signatures were forged to reveal the quality of the initial perceptions. It is expected that the research will provide evidence of mechanical traits that do in fact indicate ease of forgery to a human subject, as well as those traits that contribute to the difficulty of forgery.



Signature Measures		
Measures	1. sig-1.fss	2. sig-2.fss
N_STROKES	6	6
T_CONTACT	3714	3952
T_AIR	872	921
T_SUM_SEGSTA	12482	12925
T_SUM_SEGEND	16196	16877
D_WIDTH	60198	66802
D_HEIGHT	17323	17628
D_UP_DIST	77446	47724
D_DOWN_DIST	197257	212998
D_X_POS	85599	99111
D_Y_POS	62027	63755

Florentis SignatureScope - [Digitizer PenData: 1, sig-						
File View Options Signature Window Help						
Index	Stroke	Btn	X	Y	T	P
0	0	1	262	701	4295487	3
1	0	1	259	704	4295497	3
2	0	1	258	705	4295507	3
3	0	1	258	707	4295517	3
4	0	1	258	708	4295527	3
5	0	1	256	710	4295537	3
6	0	1	256	710	4295547	3
7	0	1	256	708	4295557	4
8	0	1	258	702	4295567	4
9	0	1	261	696	4295577	6
10	0	1	263	689	4295587	9
11	0	1	267	679	4295597	9
12	0	1	270	666	4295607	9
13	0	1	273	652	4295617	10
14	0	1	278	637	4295627	11
15	0	1	281	620	4295637	12