

## **Identity authentication using improved online signature verification method**

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The user supplies a set of training signatures which are used to determine user dependent parameters characterizing the variance within the reference signatures. The reference set of signatures, together with these parameters, are stored with a unique user identifier in the system database. When a test signature is input to the system for verification, it is compared to each of the reference signatures of the claimed person. The resulting minimum, maximum, and template distance values normalized by the corresponding average values stored in the user's profile, form a three-dimensional feature vector used in classifying the test signature.

### **POINTERS –**

- 1) Wacom's Graphire2 pressure sensitive tablet and pen were used for taking signatures at 100 samples per second.
- 2) X and Y coordinates are relative to the first point of signature trajectory having a curvature difference between two consecutive points.
- 3) Distance is calculated training and verification phase. Dynamic time warping algorithm was used for this alignment of two signatures.
- 4) Bayes classifier, SVM and a linear classifier with PCA is used.
- 5) No resampling is done as a part of data pre-processing since there is loss of information and critical points of signatures get lost.
- 6) Distances are calculated of reference signature to the nearest neighbour, farthest neighbour and to the template signature.

### **PERFORMANCE –**

- 1) Total error rate of 1.4% when linear classifier and not resampled signatures were used.
- 2) Lowest average equal rate of 2.8% when tested with skilled forgeries.
- 3) Results of Bayes Classifier and SVM were poor.