

Acceleration-based Online Signature Verification

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Several kinds of technology are available for biometric authentication. Some of them have appeared in the last few decades - such as DNA and iris recognition -and they provide more accurate results than the earlier methods did (like fingerprint and signature recognition). Not surprisingly, these systems are harder to fool. However, a signature is still the most widely accepted method for identification (e.g. in contracts and bank transfers). For this reason, some studies tackle the problem of signature verification and examine the process in detail, as we do here.

There are two basic approaches of recognising signatures: offline and online. Offline signature recognition is based on the image of the signature, while the online case utilises data related to the dynamics of the signing process. The drawback with the offline approach is that it produces more false accept and false reject errors, but the dynamic approach requires much more sophisticated techniques. One key issue with online signature verification is to learn which features best represent the dynamics of the signing process - like velocity, acceleration and pressure.

In our view, tablets affect the natural signing process, hence we devised an online signature recording environment. This environment does not need any special surface and it contains a simple ball-point pen with a three-axis accelerometer that does not significantly affect the signature writing process. Moreover, it can be easily connected to a computer via a USB and signals can be measured using a fully open-source package called EDAQ [1, 2].

In our study, we created two databases in order to compare the signatures obtained in two different time periods and to analyse the relevance of training data selection [3, 4].

Acknowledgements

This research was supported by the European Union and co-financed by the European Regional Development Fund within the project TÁMOP-4.2.1/B-09/1/KONV-2010-0005.

References

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