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VOICE VERIFICATION

Telephone banking is increasingly popular with customers, and will be increasingly attractive to banks and other financial institutions as they start to implement highly cost effective automated [speech recognition](#) technology to handle routine transactions (the subject of another "financial futures" web page). But the procedures for verifying customers over the telephone are unsatisfactory, both in terms of customer convenience and also, increasingly, from a security point of view.

The usual approach to verifying customers - proving that they are who they claim to be - is to use some sort of PIN or password. To avoid the customer having to say the password out loud, they are usually prompted for, say, the second and fourth letters in the password.

There are several problems with this approach. Firstly, passwords and PINs are difficult to remember and unwieldy for customers to use in this manner. Secondly, it takes time - identification and verification of the caller is often the lengthiest component of a transaction and this translates directly to the bottom line. Thirdly, the security itself leaves a lot to be desired - many customers write down their passwords or reveal them to the operator (in extreme cases they may self select the same PIN that they use for ATM withdrawals). Many call centres prompt the caller for additional 'secret' items such as their mother's maiden name, but this only exacerbates the other two problems.

The solution? **Voice verification** . Technology now exists which enables individuals to be reliably, rapidly and cost-effectively verified on the basis of the physical characteristics of their voice.

Several vendors now supply commercial voice verification technology. A good example is Nuance Communications, based in California, using essentially the same technology which underlies their speaker independent speech recognition software. But in this case recognition is speaker dependent - the customer is only allowed to use the system if their individual voiceprint matches their identity (normally established though an account number).

A new customer automatically enrolls in the system over the telephone by repeating about 10 four digit numbers or reading a short piece of text. The software extracts from this a number of physical characteristics which are unique to that voice. In all subsequent transactions, the caller, once identified, is asked to repeat a couple of randomly generated PINs or, for example, names of cities (this is to prevent fraudsters tape-recording a customer saying their password or PIN). If the voiceprint matches the one stored against the account number the transaction proceeds; if not, the customer is referred to a supervisor.

Pilot tests of the technology are encouraging. A high accuracy of correct verification can be combined with a low probability of false rejection which is suitable for most banking operations and the whole procedure is faster, easier and much more cost effective. Surprisingly, only a few kilobytes of storage are required for each voiceprint and because the claimed identity of the customer is already established, a single comparison is all that is required, so verification is quite rapid (using the same technology for voice identification is of course much slower since the system must find a match out of many voiceprints).

Voice verification is particularly appropriate for automated speech recognition dialogues and we expect that a seamless combination of the two technologies will rapidly become the norm for most simple telephone banking transactions. Of course voice verification is much less applicable to other delivery channels such as branch banking or screen-based systems (although pilot systems have been built). For an intriguing new approach to customer verification over the Internet based on face recognition, see the "financial futures" web page on [Passfaces](#) or check out the [ID-Arts](#) web site.

Interested? Please contact Nick Collin on nick@ncollin.demon.co.uk or **+44 (0)207 833 8765** with comments or questions.

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