tion as an estimate of the spread of the body of the data. For the search space (**15**,**15**), one hundred and twenty-eight different strategies were obtained through the 200 runs. Among them, the best strategy is a 4×11 segmentation followed by the combination of classifiers D_{18}, D_{22} and D24, which achieves training performance: FN-0.67%, FP=2.64% and testing performance: FN=2.81%, FP=2.79%. The IQR of training FN, FP and testing FN, FP of those **128** strategies over all runs are respectively: 3.50%, 1.10% and 1.61%, 1.70%.

[**0093**] In practice, the methods described above for defining a template for validating a bank note and using that template to validate test notes may be implemented within a self-service environment, such as an ATM. In this way, the ATM can be trained in a simple and effective manner to create a reference template and use that template to validate deposits in a secure manner. This can be done without the need for human intervention, so that the entire process is automatic.

[**0094**] **FIG. 16** shows an example of an automated teller machine that is configured to implement these techniques. This includes a housing **20** that has a front fascia **22** that has a screen **24** and keyboard **26**. Defined in the fascia are three slots, a first one **28** of these being for receiving a user's bank card, the next being provided for dispensing cash through **30** and the third one **32** being for depositing cash into a secure store **34** in the housing **20**. One or more carrier mechanisms (not shown) is provided for moving cash from the secure store to the dispensing slot, so that it can be dispensed therefrom, and for moving cash received through the deposit slot to the store. On a path **36** between the deposit slot **32** and the cash store **34** is an imager or scanner **38** for imaging deposited banknotes. In a preferred example, this is the four-sensor imager **38** previously described. The carrier mechanism is operable to carry a banknote received from the deposit slot **32** to the imager **38**. Once appropriately positioned relative to the imager **38** one or more suitable images can be captured.

[**0095**] Connected to the imager **38** is a central processing unit **40** that includes software for analyzing the captured images. This software has code or instructions for defining a template based on a plurality of reference images captured from deposited reference notes, in accordance with the techniques described previously. Additionally, the software has code or instructions for validating currency deposited into the ATM, after the initial template is built up, and using an image captured by the imager **38**. Again, this validation is done in accordance with the techniques previously described. In the event that currency deposited is deemed to be valid, it is carried into the secure store **34**, from where it can be dispensed. In addition, the customer's personal account is up-dated to show the deposited amount. In the event that currency deposited is deemed by the validation software to be invalid, it is returned to the customer either through the deposit slot **32** or the dispensing slot **30**.

[**0096**] Whilst the ATM of **FIG. 16** is described as having software for defining a template as well as for validating currency deposited, this is not essential. Instead, the template may be devised at a remote scanning/imaging/processing system, using the method previously described, and the classification threshold parameters may be provided to the terminal. For example, the classification threshold parameters may be downloaded to individual terminals. Alternatively, where a plurality of ATMs are provided in a distributed network, the template information may be stored at a remote location and shared between the remote terminals.

[**0097**] The present invention provides a solution to the long-standing problem of how to validate currency in a self-service terminal. The preferred method is based on the segmentation of the whole note into different sub-regions followed by the combination of individual classifiers built on those regions. It has the advantage of being applicable to notes of any currency when there is insufficient numbers of counterfeit examples to build a robust binary classifier. In a preferred embodiment, one-class classifiers are employed and a genetic algorithm is used in selecting the optimized note segmentation and classifier combinations. The method in which the invention is embodied dramatically improves discrimination performance based on false negative and false positive levels.

[**0098**] A skilled person will appreciate that variations of the disclosed arrangements are possible without departing from the invention. For example, whilst the validation techniques are described primarily with reference to currency validation, they could equally be applied to other documents that are rich in image data, such as event tickets or passports. In addition, although the classifiers described herein are based on a parametric D^2 approach or a semi-parametric test, it will be appreciated that any suitable one-class classifier could be used. One-class classification techniques that could be used include the Support Vector Data Domain Description (SVDD), also known as 'support estimation', described in "Support vector domain description" by Tax, Pattern Recognition Letters 20(11-13) 1999 1191-1199, and Extreme Value Theory (EVT), which is described in the article "Novelty detection using extreme value statistics", by Roberts, IEE Proceedings on Vision, Image & Signal Processing, 146(3) (1999) 124-129. In SVDD the support of the data distribution is estimated. This avoids the difficult problem of density estimation in the case where data is sparse in high dimensional situations, whilst EVT estimates the distribution of extreme values. Accordingly, the above description of a specific embodiment is made by way of example only and not for the purposes of limitation. It will be clear to the skilled person that minor modifications may be made without significant changes to the operation described.

What is claimed is:

1. A method for creating a template for a document to be validated, the method comprising:

segmenting images of a plurality of reference documents in a like manner into a plurality of segments; and

processing corresponding segments of the plurality of reference document images to determine one or more reference image segments.

2. A method as claimed in claim 1, wherein the step of processing includes classifying corresponding segments of each image to determine one or more reference segment classification parameters for each segment.

3. A method as claimed in claim 2, further comprising defining a threshold for the reference classification parameter.

4. A method as claimed in claim 2, wherein the step of classifying includes using a one-class classifier.