









that were ground truth same source pairs, but the information in one or both images was so degraded that the PI expected most or all participants would judge the comparison to be inconclusive. For different source trials, the difficulty was rated as CNM1 or CNM2, depending on whether the exemplar had been selected by virtue of being the top candidate returned by the AFIS system (CNM1), or by being manually selected as the closest non-match (CNM2) by one of the research team.

The 526 marks used in the study were distributed by difficulty level as follows:

<b>Difficulty Level</b>	<b>Number of Marks</b>
No Value	44
Easy	70
Medium	150
Hard	108
Very Hard	16
Inconclusive	12
CNM1 (different source trial)	60
CNM2 (different source trial)	66

The trials were listed in each participant's account in a random order but could be accessed in any order by the participant.

Participants completed all trials within a custom version of the online PiAnoS interface, developed by University of Lausanne in part using previous NIJ funds [2010-DN-BX-K267]. Within this interface, participants were presented first with the mark image alone and were asked to assess whether it was suitable for identification, suitable for exclusion only, or not suitable. Any marks that were deemed not suitable were terminated at this point, without comparison. Marks that were suitable for identification or exclusion proceeded on to the comparison phase. In the comparison phase, the mark and the putative print were presented side-by-side. Participants were asked to perform a comparison, then render a conclusion of identification, exclusion, or inconclusive. If exclusion or inconclusive were selected, participants were requested to select a reason for their decision from a drop-down list of options. Finally, participants were asked to rate the difficulty of the comparison as Very Easy/Obvious, Easy, Moderate, Difficult, or Very Difficult.

Participants were provided only limited tools for their analysis and comparison. Because we were testing accuracy of conclusions, and not skill at digital processing, we wanted all conclusions to be rendered based upon the same visual data. Therefore, no processing tools, such as brightness and contrast adjustments, or ridge and





























