

Research Work Proposal

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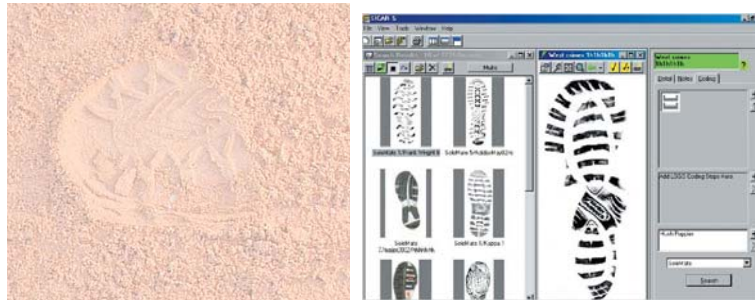
Research team: SSAI – Sensorial Systems Applied to the Industry

Title of the Research Work: People Identification through the Foot Print

Student:

Abstract

Several methods have been developed to identify people without the need of a key, card or password. Most of them are directly related to their biometrics, that is, the distances between specific parts of the body. The most known methods are based on fingerprint, face, iris and ear, between others. But in some forensic situation, we do not have any information of the person but the footprint. In that case, extracting the footprint and querying it at a footprint database, we can deduct the model of the shoe, where it has bought and so on. Moreover, we can look for specific scratches and marks that could be an *identity element* of the shoe.



Footprint example

SICAR6: Commercial SW

When the pictures has been extracted from the sole prints, it is necessary to convert this information to structural one (i.e. graphs) and deduct the pattern of the sole. Comparing this pattern to the patterns of a database, we decide which set of models of shoes could this print come from.

Specific objectives

- State of the art: Look up any specific references about *foot print recognition*.
- Define a model based on graphs
- Implement a system that has the two main processes:
 - o Introduce a new model: pattern of the sole, model of the shoe...
 - o Compare a print sole with the ones in the database and deduct the shoe.
- Compare to version demos of commercial SW

References

- A commercial example of this system:
http://www.fosterfreeman.co.uk/index.php?option=com_content&view=article&id=51:sicar&catid=2:shoe-print-identification&Itemid=63
- Handbook of Biometrics, Anil K. Jain (Editor), Patrick Flynn (Editor), Arun A. Ross (Editor), 2009
- Introduction to Graph Theory, Douglas Brent, Prentice Hall, ISBN 0-13-014400-2 , 1999