Design & Evaluation of the Human-Biometric Sensor Interaction (HBSI) Method

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Overview
The goal of this research is to provide the biometrics community with a comparative evaluation method for biometric devices that uses ergonomics, usability, and image quality criteria as explanatory variables of performance of the independent variable – form factor design. Four objectives within the scope of the project are:

• Analyze literature in the fields of: biometrics, ergonomics, HCI, & usability to determine what influences the interaction between the human and the biometric device and what aspects can be applied to the design of biometric devices.
• Develop a conceptual model for the design of biometric devices and propose an evaluation method to assess the created form factors.
• Create two alternate form factors based on the conceptual model that includes: biomechanics and anthropometry of the hand and fingers, biometric literature, and focus groups and interviews to gather personal perceptions and common interaction problems for biometric devices.
• Evaluate the commercially available and new form factor devices in a comparative performance evaluation using the proposed HBSI evaluation method.

Conceptual Framework

Project Scope

Results

Qualitative Data Interview Results

Design & Fabrication of Prototypes

HBSI Quantitative Data Collection

HBSI Quantitative Data Analysis

Usability
• Post study questionnaire
• Number of Assists
• Task Completion % and Time

Biometric System Performance
• FTA
• System & Interaction
• FTE
• FAR vs. FRR