Presentation Abstract: Biometrics

Abstract: Humans have used biometrics for several hundreds of years. There are recorded uses of Babylonian business transactions on clay that included fingerprints that date back to 500 B.C.\textsuperscript{1} How does advanced information technology systems positively identify it's users and allow access to facilities, equipment and ultimately information? Is it possible to design access control systems that exhibit all traits of information assurance, confidentiality, integrity and non-repudiation. Biometrics addresses all of these critical traits, however most importantly it addresses the non-repudiation of users.

Biometrics defined by the National Science and Technology Council as a process "Automated methods of recognizing an individual based on measurable biological (anatomical and physiological) and behavioral characteristics"\textsuperscript{4}. This presentation will describe current biometric systems such as iris recognition, hand geometry, fingerprint recognition, facial recognition and voice recognition. Additionally this presentation will address current applications of these systems in the real world. One such application discussed will the BATS (Biometrics Automated Toolset System) system used by the US military to aid in counter-insurgency operations. This presentation will also describe emerging biometrics technologies and the legal impact of biometrics on our society\textsuperscript{6}.

Finally the presentation will address the overall accuracy and efficacy of present day biometric systems. Biometrics seems to be very popular amongst security professionals of all disciplines. It's applicability as a viable tool in security should be scrutinized to ascertain if it is a simply a passing technological fad or established standard for the future.

Outline:

I. Background
   A. History
      i. Babylonian business transactions included fingerprints 500 B.C.\textsuperscript{1}
      ii. Chinese - tracked young children 14th Century\textsuperscript{2}
      iii. Bertillonage- used in Paris late 1800's\textsuperscript{3}
   B. Fundamentals
      i. Defined\textsuperscript{4}
      ii. Typical systems are comprised of
         a) sensor
         b) Signal processing algorithms
         c) data storage
         d) matching algorithm
         e) decision process
      iii. identification and verification\textsuperscript{5}

\textsuperscript{1} National Science adn Technology Council, http://www.biometrics.gov/Documents/BioHistory.pdf
\textsuperscript{2} National Center for State Courts, http://ctl.ncsc.dni.us/biomet%20web/BMHistory.html
\textsuperscript{3} National Center for State Courts, http://ctl.ncsc.dni.us/biomet%20web/BMHistory.html
\textsuperscript{5} National Center for State Courts, http://ctl.ncsc.dni.us/biomet%20web/BMHistory.html
C. Present Biometric Technologies
   i. Iris recognition
   ii. Hand Geometry
   iii. Fingerprint Recognition
   iv. Facial Recognition
   v. Voice recognition

II. Applications
   A. Biometrics for Securing Hazardous Material Transportation
   B. Biometric match-on-card technology
   C. Biometrics for counter-insurgency operations

III. Conclusion
   A. Future technologies
      i. Odor sensing
      ii. Vein scans
      iii. Facial thermography
      iv. Skin pattern recognition
      v. Nail bed identification
      vi. Gait recognition
      vii. Ear shape recognition
      viii. DNA matching
   B. Legal implications
   C. Overall assessment

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