

Soft biometrics refers to physical or behavioral characteristics that can be used for identification or verification purposes, such as age, gender, height, weight, and clothing. The research of Prof. Mark Nixon was motivated by a murder case in Australia in 2014 and explores the use of soft biometrics, which includes face soft, body soft, and other soft characteristics. Soft biometrics have several advantages, including human-understandable descriptions, robustness to image quality, privacy, and performance improvement.

The research delves into exploring semantic descriptions of physical traits and semantic terms that are visible at a distance. The advantages of using semantic descriptions include the fact that they do not age, are available at a distance/low resolution/poor quality, fit with human eyewitness descriptions and forensic analysis, complement automatically-perceived measures, and need search mechanisms. However, the disadvantages include the psychology/perception of human analysts and the need for labelling.

Soft biometric identification combines attributes of soft biometrics, human analysis, machine learning, and image analysis. To implement soft biometric identification, Prof. Mark Nixon highlights the need for data, labels (categorical or comparative), ranking algorithms (for comparative labels), feature selection (e.g., SFSS, entropy), computer vision (feature extraction, color mapping), and classifiers (e.g., KNN, SVM, DBN).

The talk concludes that soft biometrics are basic metrics for identification and offer capabilities for new application scenarios. Soft biometrics are not restricted to performance enhancement and have application advantages especially suited to surveillance. The talk also emphasizes the need for wider investigation into the performance advantages of soft biometrics and the need for new insights into automated identification versus human identification.