

COMP 6211 Biometrics Coursework

A system is required to recognise people by images of their body shape. You are provided with images of clothed subjects standing on a (static) treadmill in our gait laboratory. This is part of the Large Southampton Gait Database [Shutler et al 2004]. You are required to design a biometric system that can be used to recognise these subjects as individuals. The dataset is in two folders: in the first folder two images are available for each subject, the second folder repeats some subjects, but not all of these subjects, again in two views. You should not use the subject identification number for recognition, it is there to aid development. You should also not use a face recognition system for your biometric system since the biometric system you are expected to develop should be based on body shapes. However, you are allowed to use a face detection algorithm to detect faces and use the face location with respect to other body parts in your analysis.

The main objectives are to derive measures that can:

- i) show histograms of intra and inter class variations of subjects.
- ii) present Correct Classification Rates for subject recognition; and
- iii) compute Equal Error Rate (EER) for subject verification/recognition and then present the Correct Classification rate for the subject verification at the computed EER.

You also need to present all necessary performance measures for your system.

You can use any implementation system, though reward will be made for sophistication. A basic system could use manual measurement, an Excel spreadsheet and compare recognition and verification performances with a random result. More sophisticated versions can include computer vision and machine learning approaches and aim for automated recognition and verification of these subjects by their body image.

You are required to write a max 2000 word report describing your approaches and your results. The report should be submitted zipped together with any operational code. The format of the report should follow the IEEE formats and should include Abstract, Intro, Method, Results, Discussion, Conclusions and References (if any). The zipped file should be submitted to the ECS Handin system, by 28th March 2025 at 4pm.

The marking scheme is:

Report presentation 25%

Recognition performance 25%

Selection and justification of approaches used for feature extraction 25%

Analysis of the overall method: advantages, disadvantages and future directions 25%

Total 100%

This coursework will constitute 30% of the total assessment for COMP 6211 Biometrics

References

[Shutler04] JD Shutler, MG Grant, MS Nixon, JN Carter, On a large sequence-based human gait database, *Proc. Applications and Science in Soft Computing*, pp 339-346, 2004

http://link.springer.com/chapter/10.1007/978-3-540-45240-9_46#page-1

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