Features selected by hill-climbing for the ISOLET corpus

November 24, 2008

1 Introduction

This document contains diagrams showing what features were chosen by hill-climbing with the ISOLET corpus in Chapter 5 of David Gelbart's PhD thesis, along with the initial feature vectors that hill-climbing started from. The shaded boxes correspond to features that are included in the feature vector, and the empty boxes correspond to features that are not included.

In each diagram, the boxes are divided into rows. The first row is MFCC static features (the first 13 MFCC features), the second row is MFCC delta features (the next 13 MFCC features), the third row is MFCC delta-delta features, then PLP static features, PLP delta features, PLP delta-delta features, and finally MSG features.

2 Initial feature vectors, using non-random initialization

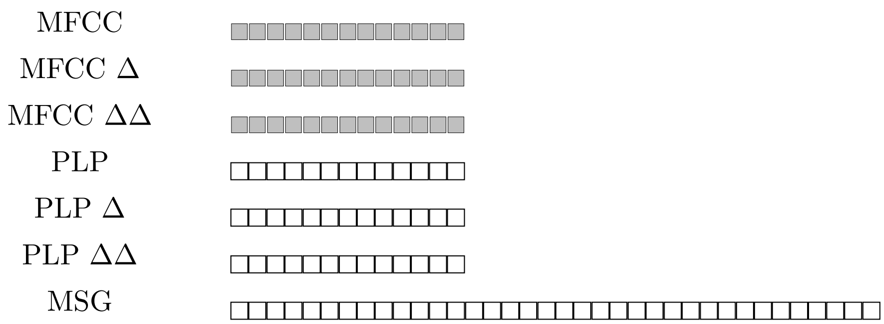

Figure 1: Initial feature vector for stream 1.

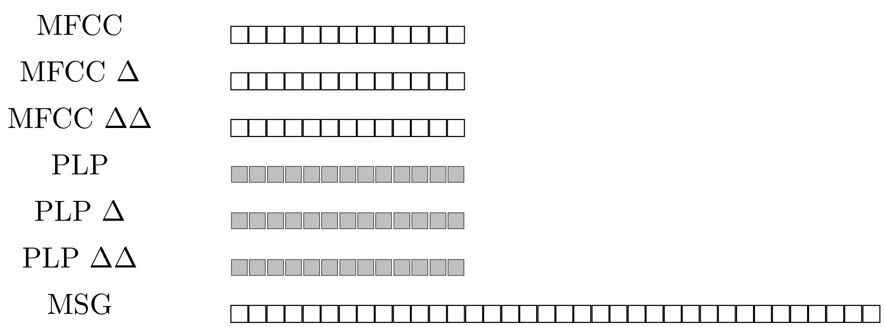

Figure 2: Initial feature vector for stream 2.

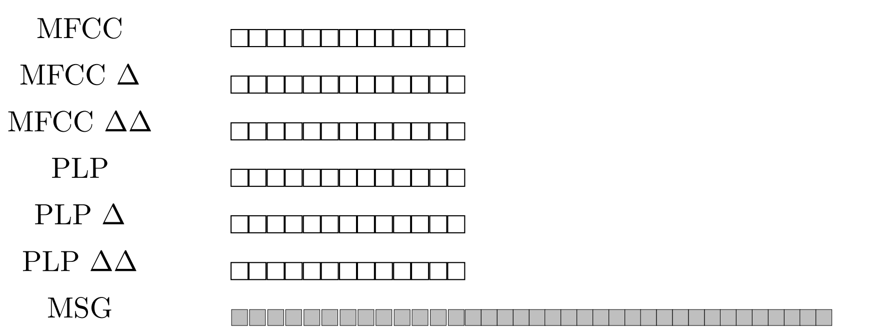

Figure 3: Initial feature vector for stream 3.

3 Initial feature vectors, using random initialization

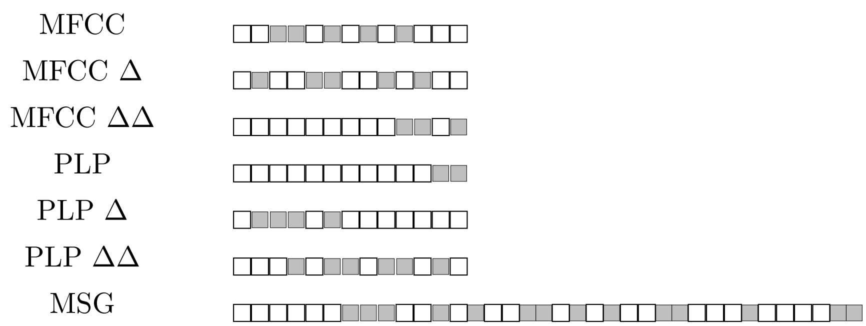

Figure 4: Initial feature vector for stream 1.

Figure 5: Initial feature vector for stream 2.

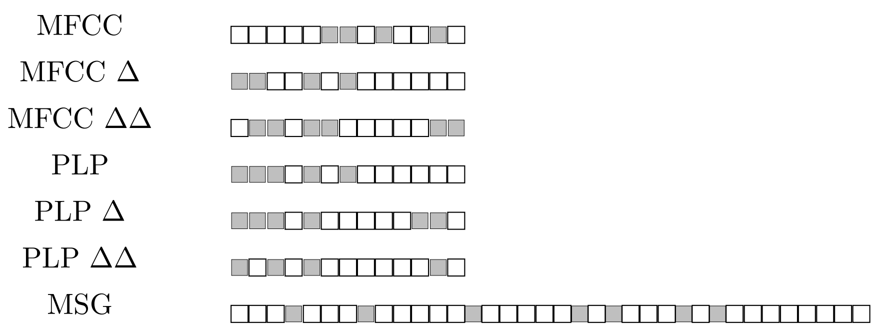

Figure 6: Initial feature vector for stream 3.

4 Final feature vectors for the clean ISOLET corpus, using non-random initialization and using ensemble WER to guide hill-climbing.

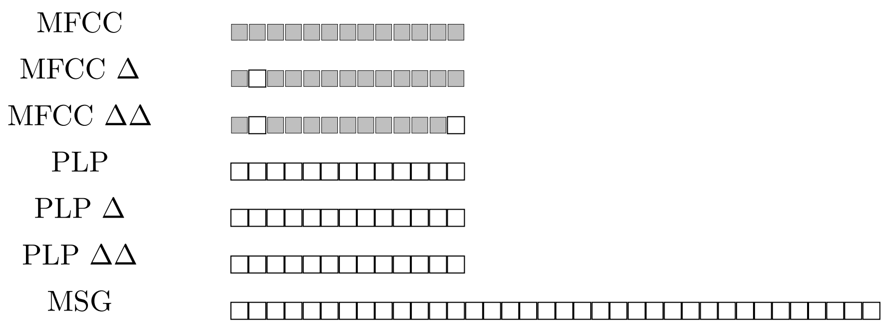

Figure 7: Final feature vector for stream 1.

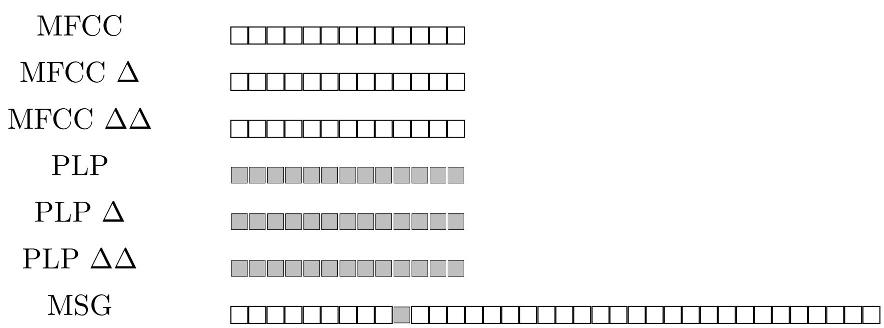

Figure 8: Final feature vector for stream 2.

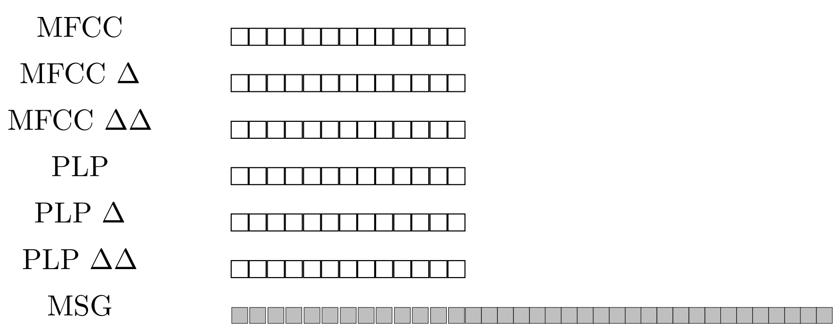

Figure 9: Final feature vector for stream 3.

5 Final feature vectors for the noisy ISOLET corpus, using non-random initialization and using ensemble WER to guide hill-climbing.

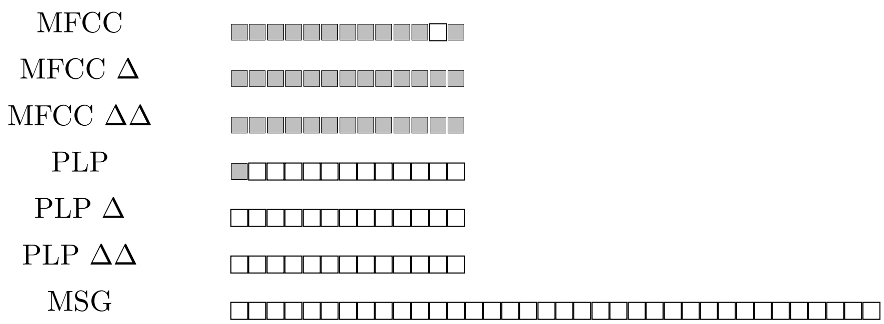

Figure 10: Final feature vector for stream 1.

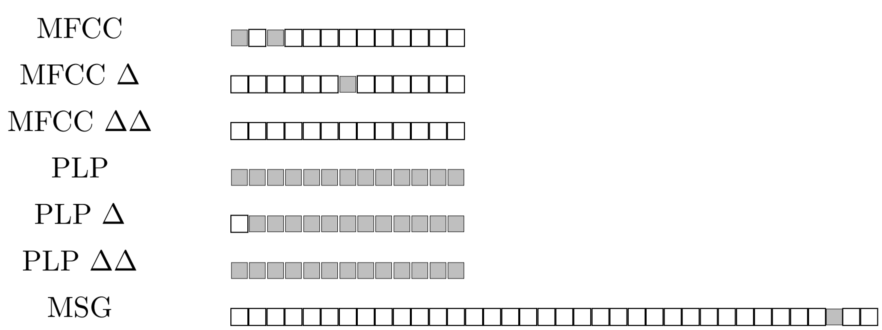

Figure 11: Final feature vector for stream 2.

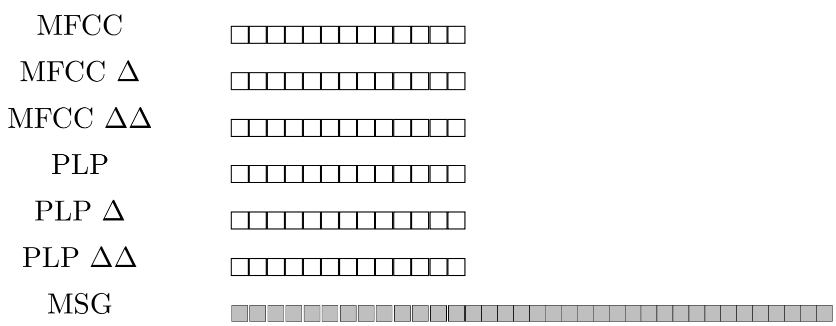

Figure 12: Final feature vector for stream 3.

6 Final feature vectors for the clean ISOLET corpus, using random initialization and using ensemble WER to guide hill-climbing.

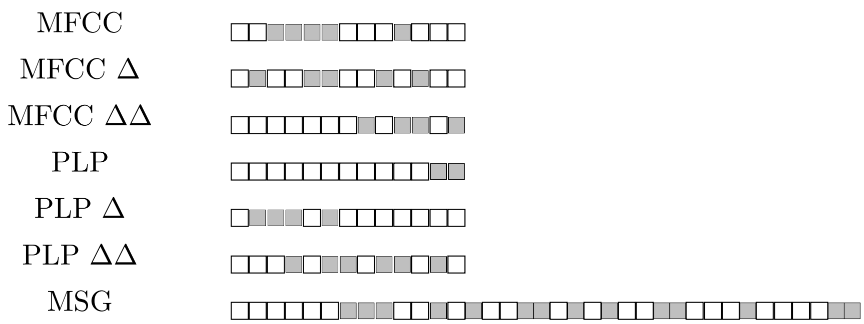

Figure 13: Final feature vector for stream 1.

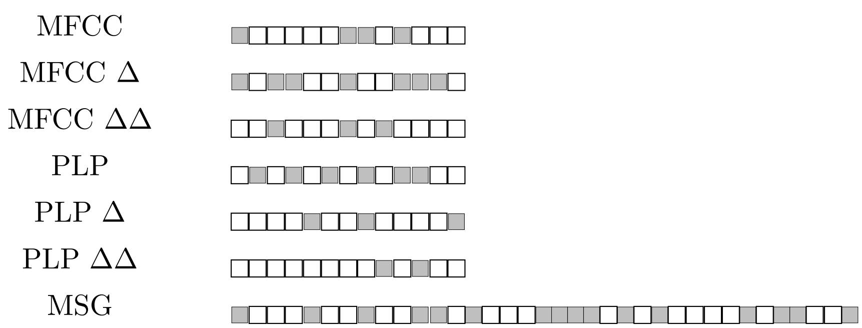

Figure 14: Final feature vector for stream 2.

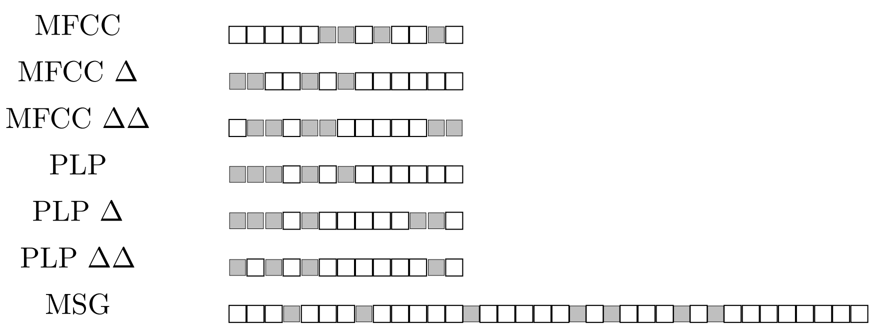

Figure 15: Final feature vector for stream 3.

7 Final feature vectors for the noisy ISOLET corpus, using random initialization and using ensemble WER to guide hill-climbing.

Figure 16: Final feature vector for stream 1.

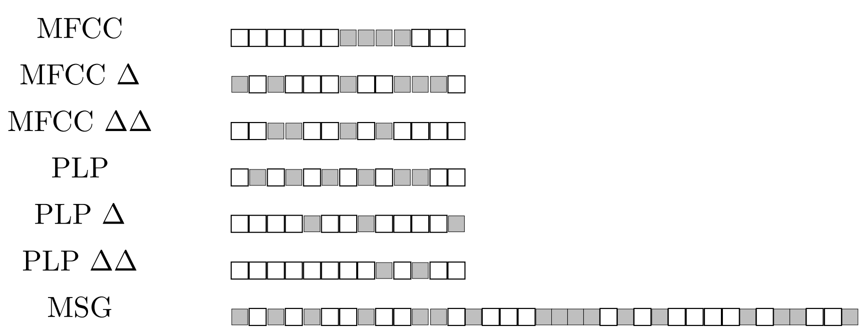

Figure 17: Final feature vector for stream 2.

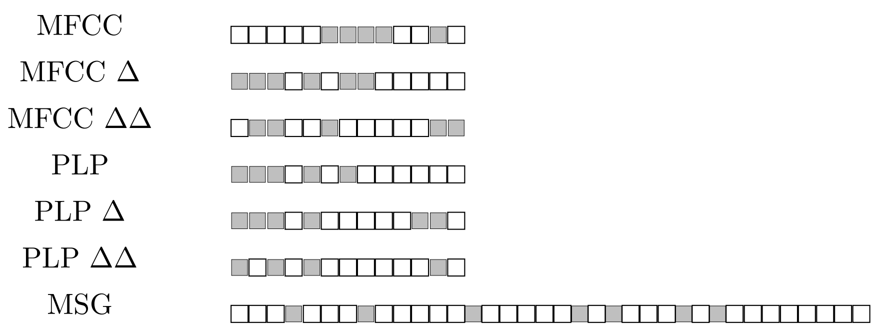

Figure 18: Final feature vector for stream 3.

8 Final feature vectors for the clean ISOLET corpus, using non-random initialization and using Equation 5.1 to guide hill-climbing.

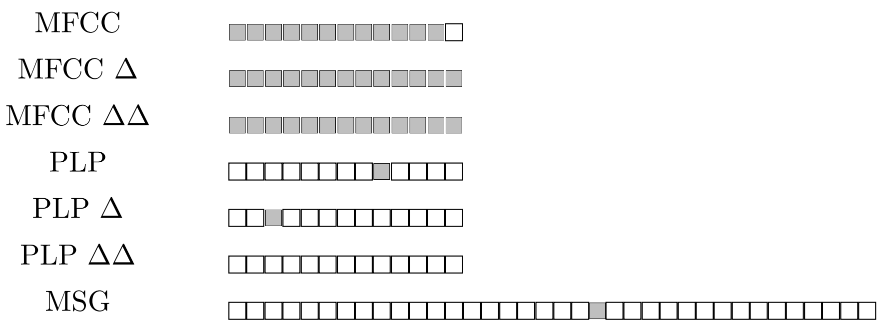

Figure 19: Final feature vector for stream 1.

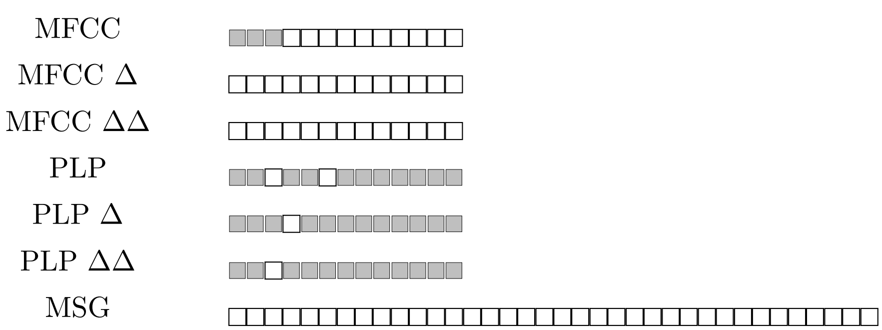

Figure 20: Final feature vector for stream 2.

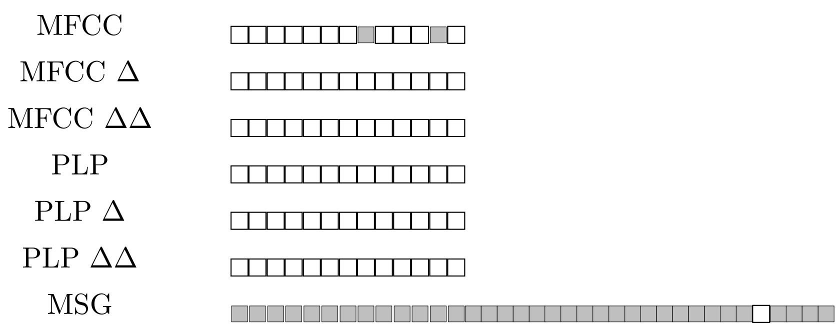

Figure 21: Final feature vector for stream 3.

9 Final feature vectors for the noisy ISOLET corpus, using non-random initialization and using Equation 5.1 to guide hill-climbing.

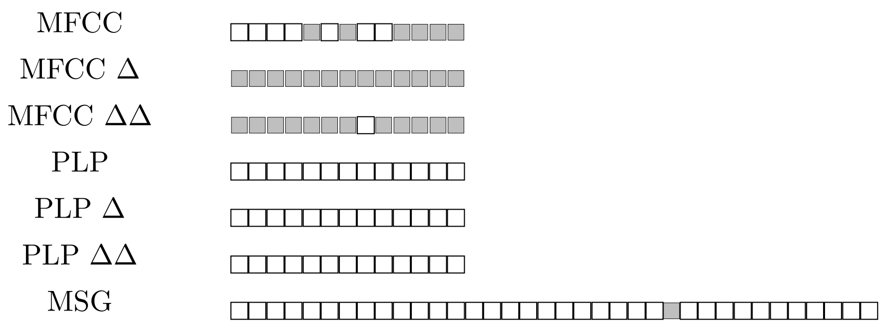

Figure 22: Final feature vector for stream 1.

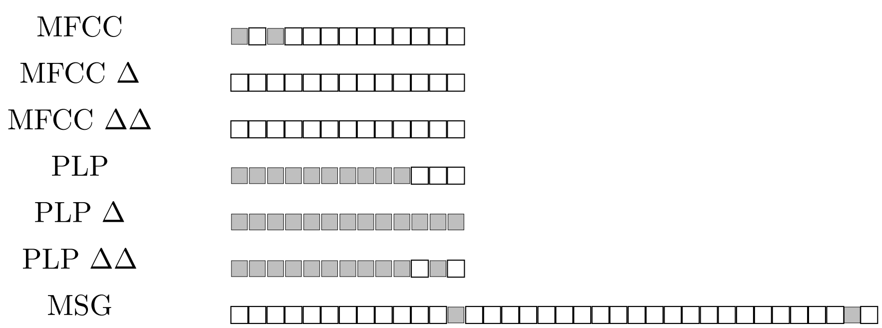

Figure 23: Final feature vector for stream 2.

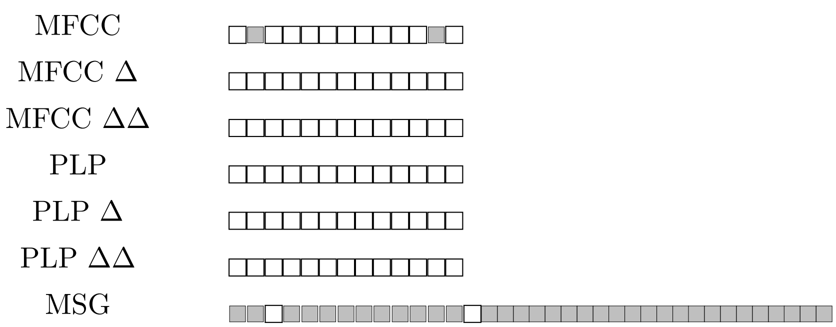

Figure 24: Final feature vector for stream 3.

10 Final feature vectors for the clean ISOLET corpus, using random initialization and using Equation 5.1 to guide hill-climbing.

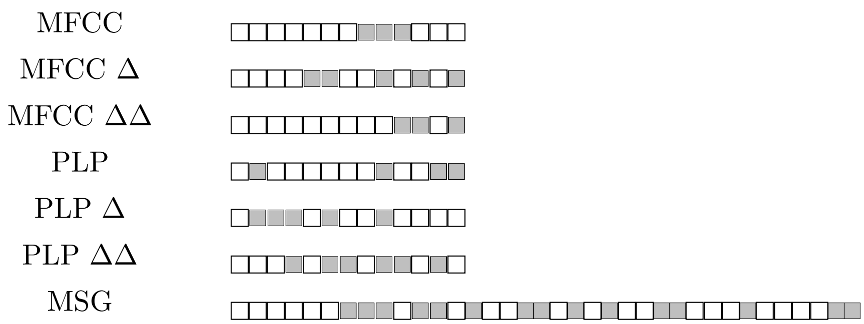

Figure 25: Final feature vector for stream 1.

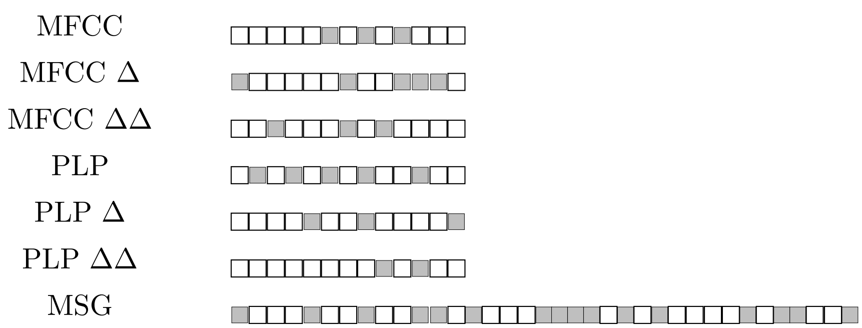

Figure 26: Final feature vector for stream 2.

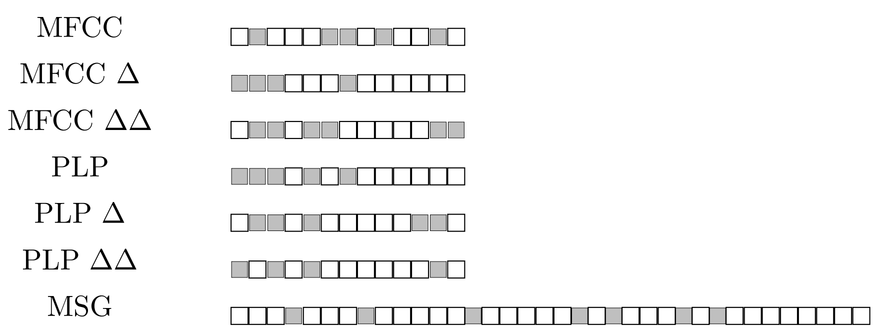

Figure 27: Final feature vector for stream 3.

11 Final feature vectors for the noisy ISOLET corpus, using random initialization and using Equation 5.1 to guide hill-climbing.

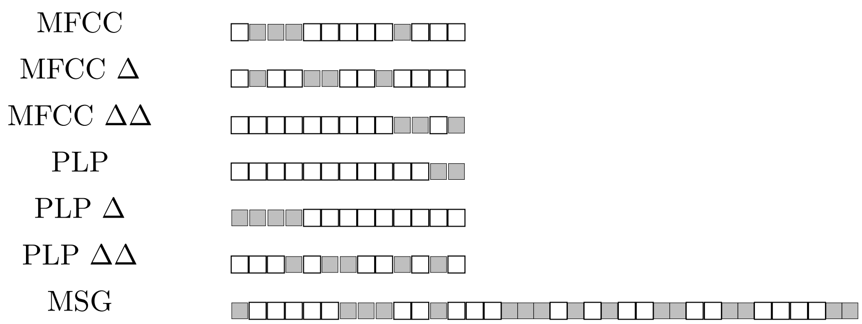

Figure 28: Final feature vector for stream 1.

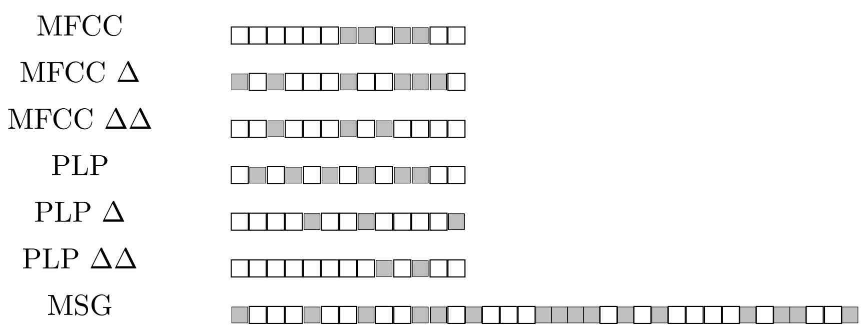

Figure 29: Final feature vector for stream 2.

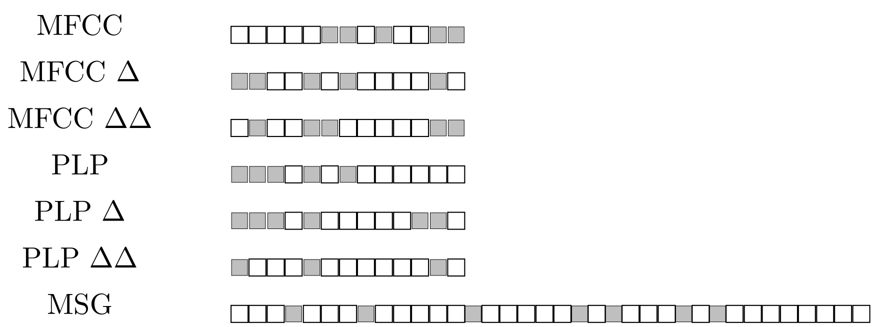

Figure 30: Final feature vector for stream 3.