This study investigated the use of MFCC and SVM for automatic detection and comparison of vowel nasalization. The standard 39 MFCC coefficients were extracted at the center of the vowel, and a SVM classifier was built to discriminate between oral and nasalized vowels in a vowel-independent manner. When trained on the TIMIT training set and tested on its test set, the method achieved 88.3% overall accuracy in nasalization detection, 88.5% on nasalized vowels (i.e., preceding a nasal consonant) and 88.2% on oral vowels (i.e., not in the context of nasal consonants). The method was also applied to a database of 2,606 oral and nasalized vowels of /ae/ and /E/ in a systematically designed and collected corpus of adult- and infant-directed speech (80% for training and 20% for test), an overall accuracy of 88.5% was obtained. It was observed that the accuracy for /ae/ (94.2%) was greatly higher than that for /E/ (82.9%). The Euclidian distance calculated on the 39 MFCC coefficients between the oral and nasalized /ae/ was also much larger than the distance between the oral and nasalized /E/. These results reflect the fact that the degree of nasalization depends on vowel identity.