ELEN E6820 Speech & Audio Processing & Recognition **Assignment 3**

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Assigned: Tuesday 2009-02-03 Due: Tuesday 2009-02-10

Background reading: Read the chapters 8 and 9 in Gold & Morgan, on pattern recognition.

Reading assignment: "A tutorial on hidden Markov models and selected applications in speech recognition," Lawrence Rabiner, *Proc. IEEE*, 77(2), Feb 1989.
`http://www.ee.columbia.edu/~dpwe/e6820/papers/Rabiner89-hmm.pdf`
This is the classic tutorial introducing how hidden Markov models are constructed and used for sequence recognition, specifically for speech signals. Our focus is on sections I through III (i.e. up to page 266), but the whole paper is well worth reading.

Post a summary and some personal comments or reflections on the Courseworks discussion site.

Practical assignment: This weeks practical was developed by Prof. Hervé Bourlard and Sacha Krstulović of IDIAP in Switzerland. It gives you practical exposure to the behavior of some different hidden Markov models, as well as showing you how they can be used to classify sequences. The files for the practical are in `http://www.ee.columbia.edu/~dpwe/e6820/matlab/epflhmm/`. Start by reading the Lab Manual (`http://www.ee.columbia.edu/~dpwe/e6820/matlab/epflhmm/labman2.pdf`), which will take you through the exercises. It is more or less self-contained, although it refers back to an earlier lab concerned with Gaussian mixtures, as discussed in class and in the textbook. I am grateful to Prof. Bourlard and Sacha for their permission to use this excellent practical.

Add some example plots from the experiments to your web site.

Project: Continue developing your project ideas and update web page with your current thoughts.