



The University of Chicago
Department of Statistics
Master's Seminar

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**A Local Feature Based Statistical Model
for Acoustic Object Classification and Detection**

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ABSTRACT

Amit, Koloydenko, and Niyogi (2005) suggested a novel method for robustly detecting phonological objects such as phonemes, syllables, and words. Their method is based on local features in the time-frequency plane that have built in robustness to frequency variations and time warping. We extend Amit et al's approach by using more sophisticated local features, following a method proposed by Bernstein and Amit (2005) for image classification and detection. We provide an analysis of the performance of our new method in classifying vowels and broad classes of phonemes. All experiments are conducted using speech data from the TIMIT speech corpus.