THE BUCKET BOX INTERSECTION (BBI) ALGORITHM FOR FAST APPROXIMATIVE EVALUATION OF DIAGONAL MIXTURE GAUSSIANS

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ABSTRACT

state-of-the-art speech recognizing Using

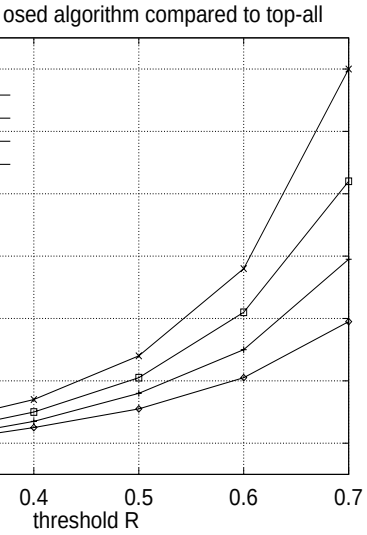
The projection interval $[a_j, b_j]$ of a Gaussian box to coordinate j is given by

$$[a_j, b_j] = \mu_j \pm \sqrt{-2\sigma_j^2 \left[T + \frac{1}{2}\log((2\pi)^K) \prod_{j=1}^{K} \sigma_j^2\right]}$$

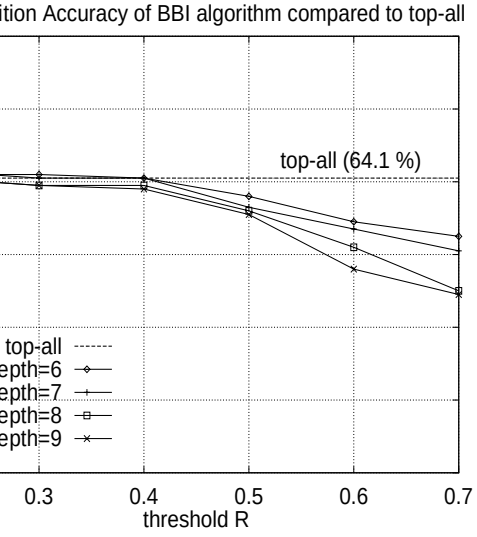
T must not be chosen greater than the maximum value le argument of the square

and sort them along the axis. Hypothesize a division
hyperplane $x_i = h$ that has an equal number of left
right sided R. labels. By doing
inary tree,

sians in the mixture by the average time required for the
tion of the Gaussians in the leafs of the search tree.



peedup of proposed algorithm



Word Accuracy on German Spontaneous Scheduling Task

Fig 6. shows the word accuracy for several test runs with different relative thresholds R and different tree depths. The dotted line shows the accuracy of the top-all system that is evaluating all the Gaussians in the mixture. Up to a threshold of $R = 0.5$, the word accu is barely affected by the use of the p sometimes being even l tem.

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Today, most of the state-of-the-art speech recognizers are based on Hidden Markov modeling. Using semi-continuous or continuous density Hidden Markov Models, the computation of emission probabilities requires the evaluati
ture Gaussian probability density
expensive to ev