DATA-DRIVEN CODEBOOK ADAPTATION IN PHONETICALLY TIED SCHMMS

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ABSTRACT

This paper reports the results of our experiments aimed at
the automatic optimization of the number of parameters in
the semi-continuous phonetically tied HMM based speech
ion system that is part of JANUS-2.
ifferent algorithms devised to determine the
el parameters. In recognition ex-
aneous human-to-human
imization of
al-

smaller the average distance between a data point and its closest reference is. It is also computationally cheap. However, there is the need to define a threshold, which is highly
ble for an unsupervised algorithm.
the recognition experiments performed with
re given below

kelihood-criterion

is criterion, we compute the probability $p($training
and abort the process of adding new ref-
ven probability threshold has been
ortional to the recognizer's
g only samples of
heory of

Phoneme	size of codebook	training data (frames)
SIL	1	50000
A	80	41776
G	192	15657
L	128	24050
R	128	50000
T	96	50000
CH	80	47453
EH	32	23279
D	128	34179
F	8	32376
H	48	8628
M	32	41664
N	64	50000
NG	24	6447
S	20	50000
AH	24	43164
AI	32	36341
AU	32	17602

Table 2. Codebook size for some phonemes

...ognition results

The recognition results shown in table 3 have been achieved ... context dependent generalized triphones and a ...el of perplexity 70. Only first-best re...rd triphones were applied, and ...attices took place. D... were used. For ...ped

... *Dependent ... Codebook HMM Speech ...ion Systems*, Proc. ICASSP 1994

...ustin and R. Schwartz, *A Comparison of Several Approximate Algorithms for Finding N-best Hypotheses*, ICASSP 1991, vol 1, pp 701-704.

[8] T. Schultz and I. Rogina, *Acoustic and Language Modeling of Human and Nonhuman Noises for Human-to-Human Spontaneous Speech Recognition*, Internal report of Interactive Systems Labs., Universität Karlsruhe, 1994, submitted to ICASSP 95.