

- **export r="/home/jango/ASR/39DN"**
- **FEATURE**
 - **Coding**
 - `cd /home/jango/ASR/features`
 - `HCopy -T 1 -C config13.code -S all_waves13.scp`
 - `HCopy -T 1 -C config39.code -S all_waves39.scp`
- **sets_split**
 - `python $r/split_sets/t_t_split.py`
 - `python $r/split_sets/scp_maker.py`
 - `python $r/split_sets/copymlf.py`
 - `python $r/split_sets/copymfc.py`
- **mlf_lists**
 - `python $r/lists/mfcclists.py`
- **dictionary: CMU.dic**
 - `cd $r/dictionary`
 - `HDMAN -A -D -V -T 1 -m -w $r/lists/WORDS -n $r/labels/monophones1 -l dlog $r/dictionary/CMU.dic $r/dictionary/dict.dic`
- **copy monophones1 to monophones0, delete sp**
- **phone-level mlf(labels/): trainphone0.mlf, trainphone1.mlf**
 - `cd $r/labels`
 - `mkphones0.led`
 - `EX`
 - `IS sil sil`
 - `DE sp`
 - `HLEd -A -D -T 1 -l '*' -d $r/dictionary/CMU.dic -i testphone0.mlf mkphones0.led test.mlf`
 - `HLEd -A -D -T 1 -l '*' -d $r/dictionary/CMU.dic -i trainphone0.mlf mkphones0.led train.mlf`
 - `mkphones1.led`
 - `EX`
 - `IS sil sil`
 - `HLEd -A -D -T 1 -l '*' -d $r/dictionary/CMU.dic -i trainphone1.mlf mkphones1.led train.mlf`
- **Define Prototype Model(models/)**
 - `cd $r/models`
 - **proto of HMMs model**
 - `~o <VecSize> 39 <USER>`
 - **config (same as mfcc/config.code except SOURCEFORMAT = WAV)**
 - **get hmm0 (hmm0/)(global means and variances)**
 - `HCompV -A -D -T 1 -C $r/models/config -f 0.01 -m -S $r/lists/trainmfc.list -M hmm0_proto`
 - **get hmmdefs (hmm0/)(a list of every phoneme model without SP)**
 - `python hmm0/hmmdefsMaker.py`
 - **make macros (hmm0/)**
 - **copy vFloors to macros**
 - **add the first 3 lines of proto (from ~o to <DIAGC>) to the top of the macros file**
- **Re-estimate Monophones(models/)**

- HERest -A -D -T 1 -C \$r/models/config -I \$r/labels/trainphone0.mlf -t 250.0 150.0 1000.0 -S \$r/lists/trainmfc.list -H hmm0/macros -H hmm0/hmmdefs -M hmm1 \$r/labels/monophones0
- HERest -A -D -T 1 -C \$r/models/config -I \$r/labels/trainphone0.mlf -t 250.0 150.0 1000.0 -S \$r/lists/trainmfc.list -H hmm1/macros -H hmm1/hmmdefs -M hmm2 \$r/labels/monophones0
- HERest -A -D -T 1 -C \$r/models/config -I \$r/labels/trainphone0.mlf -t 250.0 150.0 1000.0 -S \$r/lists/trainmfc.list -H hmm2/macros -H hmm2/hmmdefs -M hmm3 \$r/labels/monophones0
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- **Fixing the Silence Models(hmm4/)**
 - copy the contents of the hmm3 folder to hmm4
 - edit the **hmmdefs**
 - copy and paste the “sil” model and rename the new one “sp”
 - remove state 2 and 4 from new “sp” models
 - change <NUMSTATES> to 3
 - change <STATE> to 2
 - change <TRANSP> to 3
 - change matrix in <TRANSP> to 3 by 3 array
 - 0.0 1.0 0.0
 - 0.0 0.9 0.1
 - 0.0 0.0 0.0
 - create **sil.hed(hmm4/)**
 - AT 2 4 0.2 {sil.transP}
 - AT 4 2 0.2 {sil.transP}
 - AT 1 3 0.3 {sp.transP}
 - TI silst {sil.state[3],sp.state[2]}
 - AT: add transitions to given transition matrices
 - TI: create a tied-state called silst
 - HHEd -A -D -T 1 -H hmm4/macros -H hmm4/hmmdefs -M hmm5
hmm4/sil.hed \$r/labels/monophones1
 - tie models
 - **monophones1** contains SP
 - re-estimate
 - HERest -A -D -T 1 -C \$r/models/config -I \$r/labels/trainphone1.mlf -t 250.0 150.0 1000.0 -S \$r/lists/trainmfc.list -H hmm5/macros -H
hmm5/hmmdefs -M hmm6 \$r/labels/monophones1
 - HERest -A -D -T 1 -C \$r/models/config -I \$r/labels/trainphone1.mlf -t 250.0 150.0 1000.0 -S \$r/lists/trainmfc.list -H hmm6/macros -H
hmm6/hmmdefs -M hmm7 \$r/labels/monophones1
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- **Realigning the Training Data**
 - HVite -A -D -T 1 -I '*' -o SWT -b s s -C \$r/models/config -H
\$r/models/hmm7/macros -H \$r/models/hmm7/hmmdefs -i
\$r/labels/alignedtrain2.mlf -m -t 250.0 150.0 1000.0 -y lab -a -l
\$r/labels/train.mlf -S \$r/lists/trainmfc.list \$r/dictionary/CMU.dic
\$r/labels/monophones1 > HVite_log_train
 - HVite -A -D -T 1 -I '*' -o SWT -b s s -C \$r/models/config -H
\$r/models/hmm7/macros -H \$r/models/hmm7/hmmdefs -i
\$r/labels/alignedtest2.mlf -m -t 250.0 150.0 1000.0 -y lab -a -l

- \$r/labels/test.mlf -S \$r/lists/testmfc.list \$r/dictionary/CMU.dic
 - \$r/labels/monophones1 > HVite_log_test
 - HVite -A -D -T 1 -l '*' -o SWT -b s s -C \$r/models/config -H \$r/models/hmm7/macros -H \$r/models/hmm7/hmmdefs -i \$r/labels/alignedvalidation2.mlf -m -t 250.0 150.0 1000.0 -y lab -a -l \$r/labels/validation.mlf -S \$r/lists/validationmfc.list \$r/dictionary/CMU.dic \$r/labels/monophones1 > HVite_log_validation
 - - delete 'sp\n' 'sil\n' in alignedtest.mlf
 - re-estimate
 - cd \$r/models
 - HERest -A -D -T 1 -C \$r/models/config -l \$r/labels/alignedtrain.mlf -t 250.0 150.0 3000.0 -S \$r/lists/trainmfc.list -H \$r/models/hmm7/macros -H \$r/models/hmm7/hmmdefs -M hmm8 \$r/labels/monophones1
 - HERest -A -D -T 1 -C \$r/models/config -l \$r/labels/alignedtrain.mlf -t 250.0 150.0 3000.0 -S \$r/lists/trainmfc.list -H \$r/models/hmm8/macros -H \$r/models/hmm8/hmmdefs -M hmm9 \$r/labels/monophones1
- **Language model**
 - HLStats -b \$r/LM/pdnet -s 's' 's' 's' 'e' -o \$r/labels/monophones \$r/labels/LMphone.mlf
 - HBuild -n \$r/LM/pdnet -s 's' 's' 's' 'e' \$r/labels/monophones3 \$r/LM/Pdnet
- **test**
 - HVite -A -D -V -C \$r/models/config -H hmm7/macros -H hmm7/hmmdefs -S \$r/lists/testmfc.list -l '*' -i hmm7/recout_s6_m1_p0.mlf -T 1 -w \$r/LM/Pdnet -p 0.0 -t 0.0 150.0 1000.0 -s 6.0 \$r/dictionary/phone.dic \$r/labels/monophones1 > hmm7/log_s6_m1_p0
 - HResults -A -z ::: -l \$r/labels/alignedtest.mlf -e ::: s_s -e ::: s_e \$r/labels/monophones1 hmm7/recout_s6_m1_p0.mlf >hmm7/result_s6_m1_p0
 - HVite -A -D -V -C \$r/models/config -H hmm9/macros -H hmm9/hmmdefs -S \$r/lists/testmfc.list -l '*' -i hmm9/recout_s6_m1_p0.mlf -T 1 -w \$r/LM/Pdnet -p 0.0 -t 0.0 150.0 1000.0 -s 6.0 \$r/dictionary/phone.dic \$r/labels/monophones1 > hmm9/log_s6_m1_p0
 - HResults -A -z ::: -l \$r/labels/alignedtest.mlf -e ::: s_s -e ::: s_e \$r/labels/monophones1 hmm9/recout_s6_m1_p0.mlf >hmm9/result_s6_m1_p0
 - HVite -A -D -V -C \$r/models/config -H hmm7/macros -H hmm7/hmmdefs -S \$r/lists/testmfc.list -l '*' -i hmm7/recout_s0_m1_p0.mlf -T 1 -w \$r/LM/Pdnet -p 0.0 -t 0.0 150.0 1000.0 -s 0.0 \$r/dictionary/phone.dic \$r/labels/monophones1 > hmm7/log_s0_m1_p0
 - HResults -A -z ::: -l \$r/labels/alignedtest.mlf -e ::: s_s -e ::: s_e \$r/labels/monophones1 hmm7/recout_s0_m1_p0.mlf >hmm7/result_s0_m1_p0
 - HVite -A -D -V -C \$r/models/config -H hmm9/macros -H hmm9/hmmdefs -S \$r/lists/testmfc.list -l '*' -i hmm9/recout_s0_m1_p0.mlf -T 1 -w \$r/LM/Pdnet -p

- ```
0.0 -t 0.0 150.0 1000.0 -s 0.0 $r/dictionary/phone.dic $r/labels/monophones1
> hmm9/log_s0_m1_p0
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- HResults -A -z ::: -l \$r/labels/[alignedtest.mlf](#) -e ::: s\_s -e ::: s\_e  
 \$r/labels/[monophones1](#) hmm9/[recout\\_s0\\_m1\\_p0.mlf](#)  
 >hmm9/[result\\_s0\\_m1\\_p0](#)
  - HVite -A -D -V -C \$r/models/[config](#) -H hmm204/macros -H hmm204/hmmdefs -S  
 \$r/lists/testmfc2.list -l '\*' -i hmm204/[recoutp.mlf](#) -T 1 -w \$r/LM/Pdnet -p 0.0 -t 0.0  
 150.0 1000.0 -s 6.0 \$r/dictionary/[phone.dic](#) \$r/labels/[monophones1](#) > hmm204/logp
  - HResults -A -z ::: -l \$r/labels/[alignedtest.mlf](#) -e ::: s\_s -e ::: s\_e  
 \$r/labels/[monophones1](#) hmm204/[recoutp.mlf](#) >hmm204/[resultp](#)
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- [HLEd -A -D -T 1 -l '\\*' -d](#)  
[/home/jango/ASR/39+48D/dictionary/CMUxrmc.dic -i \[allphone0.mlf\]\(#\)](#)  
[mkphones0.led\\_all.mlf](#)