

Assignment 4

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1 Code verification

following is the corrected code for backwardfix.m

```
T=size(pX,2);
nS=mc.nStates;
q=mc.InitialProb;
A=mc.TransitionProb;
fin=mc.finiteDuration;
betaHat=zeros(nS,T);
if ~fin
    betaHat(:,T)=1/c(T);
else
    for i=1:nS
        betaHat(i,T)=A(i,nS+1)/(c(T)*c(T+1));
    end
end
for t=T-1:-1:1
    for i=1:nS
        summ=0;
        for j=1:nS
            summ=summ+A(i,j)*pX(j,t+1)*betaHat(j,t+1);
        end
        betaHat(i,t)=(1/c(t))*summ;
    end
end
```

The code was verified by comparing with the example given in the text. Following is the error list.

Issues

- The `fin` variable should stand for `mc.finiteDuration` instead of `~mc.finiteDuration`
- for infinite HMM, the `betaHat` was changed to `1/c(T)`
- for finite HMM initialization, it should be `c(T)*c(T+1)` instead of `(c(T)+c(T+1))`

- for the second loop, the looping should from $T-1:-1:1$ instead of $1:1:T-1$
- also change the sum from $A(j,i)$ to $A(i,j)$

2 Speech Database

The following words were recorded, with each being recorded 15 times

- Turn on
- Turn off
- Yes
- No
- First
- Second
- Third
- Alarm