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THIS IS THE IMPLEMENTATION OF THE MIXTURE MODEL WITH FORWARD FETAURE SELECTION

```
clc, clear all, close all
% READ THE DATA INTO MATLAB AND STORE THE FEATURE NAMES IN A SEPRATE
% VARIABLE
B=readtable('Excel_Sheet_Covid19-filtered_normalized.csv');
var_names=B.Properties.VariableNames;
% INITIALIZE A BOOK OF USED FEATURES AND OTHER VARIABLES FOR THE WHILE
 LOOP
usedfeatures=[];
p=[.01;.01];
counter=0;
coeffinal=0;
index=0;
pval=0;
```

FFS ALGORITHM and Linear Mixed Effects Model

```
while max(p(2:end,:))<0.2 & max(p)>0
    coeffinalfinal=coeffinal;
    pvalfinal=pval;
    ii=index;
    indices=[];
    counter=counter+1;
    clear coef
    clear pval
    for i=7:31
        if ismember(i,usedfeatures)==false
            st1=var_names(i);
            st1=char(st1);
                if counter==1;
                    st="R0 ~ 1 +" + st1;
                else
                    st="R0 ~ 1 +" + newstring + st1;
                end
```

```
            lme = fitlme(B,st);
            x1=lme.Coefficients(:,2);
            coef(:,i-6)=double(x1);
            x2=lme.Coefficients(:,6);
            pval(:,i-6)=double(x2);
        else
            continue
        end
    end

    coeffinal=coef;
    coef=abs(coef);
    maxvalue=max(coef(end,:));
    index=find(coef(end,:)==maxvalue);
    p=pval(:,index);
    [aa,indices]=sort(coef(end,:),'descend');
    counter2=1;

    while max(p(2:end,:))>0.2 & max(p)>0
        counter2=counter2+1;
        maxvalue=aa(1,counter2);
        index=indices(1,counter2);
        p=pval(:,index);
    end
    index=index+6;
    usedfeatures=[usedfeatures;index];
    if counter==1
       newstring=char(var_names(index));
       newstring=newstring+"+";
    else
       usedstring=char(var_names(index));
       newstring=newstring + usedstring + "+";
    end
end
```

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