

# 粗糙集 -属性约简 -matlab 程序

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Data2 为条件属性， decision2 为决策属性
%%%my_test 函数实现
clc;
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%% 读取信息系统文件
file = textread('data2.txt','%s','delimiter','\n','whitespace',''); % 读取文件信息，每一行为一个胞元
[m,n]=size(file); % 胞元的大小
for i=1:m
    words=strread(file{i},'%s','delimiter',' '); % 读取每个胞元中字符，即分解胞元为新的胞元
    words=words'; % 转置
    X{i}=words;
end
X=X';

%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
[B,num,AT]=my_reduct(X); %信息系统的约简
ind_A T=ind(X); %信息系统的不可等价关系

%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%% 显示约简信息系统
disp('约简后的条件系统为： ');
[m,n]=size(B);
for i=1:m
    disp(B{i});
end

%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%% 读取决策系统文件
file = textread('decision2.txt','%s','delimiter','\n','whitespace','');
[m,n]=size(file);
for i=1:m
    words=strread(file{i},'%s','delimiter',' ');
    words=words';
    D{i}=words;
end
D=D';

%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%% 决策系统的正
域约简
X_D=X;
[l,k]=size(X_D{1});
pos_d=pos(X_D,D);% 正域
for i=1:m %%%%%%%%% 正 域 有 问
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k=1;
for i=1:m
    if(~isequal(ind_A T{i},[]))
        C_i=ind_A T{i,1}(1);
        num(k)=i;
        C{k,1}=X{C_i};          % 返回约简后的信息系统
        k=k+1;
    end
end
end

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%%%%%%%%ind 函数实现

function yy=ind(X) %%%%%%%%%%%%%%% 寻找不可分辨关系

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[m,n]=size(X);
k=1;
ind_A T=cell(m,1);
for i=1:m
    for j=(i+1):m %潜在问题，如 i=m 是终止循环，此时若最后一行不为空的话，将漏扫
        if(~isequal(X{i},"")) %若 X{i} 不为空
            ind_A T{k}=union(ind_A T{k},i); %不可等价关系赋初值
            if(isequal(X{i},X{j}))
                X{j}=""; %若 X{i}==X{j}, 则删除 X{j}
            end
            ind_A T{k}=union(ind_A T{k},j); % 寻找不可等价关系
        end
    end
end
k=k+1;
end
end

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%%%%%%%%delete\_AT 函数的源代码

function y=delete\_AT(X,ATi) % 删除 X 中第 i 列的属性值

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[m,n]=size(X);
[l,k]=size(X{1});
for i=1:m
    X{i}{A Ti}="";
end
y=X;

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%%%%%%%%pos 函数实现

function pos\_d=pos(X,D)% 求决策系统的正域函数

%X 为条件属性， D 为决策属性

ind\_D=ind(D); %求决策属性 D 的不可等价关系

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[m,n]=size(ind_D);
ind_X=ind(X); % 求信息系统属性 X 的不可等价关系
low=[]; % 存储正域个体的编号
for i=1:m
    for j=1:m
        if(~isequal(ind_X{i},[])&&~isequal(ind_D{j},[]))
            if(ismember(ind_X{i},ind_D{j}))
                low=union(low,ind_X{i});% 由性质  $Pos_{AT}(d)=low_{AT}(X1) \cup low_{AT}(X2) \cup \dots$ 
            end
        end
    end
end
end
pos_d=low;

```