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LAMPIRAN

```
clc;
clear;
close all;
warning off;
global data B Pd

% 1.a ($/MW^2) 2. b $/MW 3. c ($) 4.lower lomit(MW) 5.Upper
limit(MW)
%no of rows denote the no of plants(n)
data=   [8.6506      125.126     5391.25165      19.75  110
         2.0000      36.403      1984.8054118    55.58  250
         7.5896      79.751      2088.05767      15     62.5
         0           1436        0               23.76  23.76
         7.5896      37.951      613.69908739    60.85  315
         ];

% Loss coefficients it should be squarematrix of size nXn where n
is the no of plants
B=1e-2*[0.1363    0.0020   -0.0183   -0.0172   -0.0008
    0.0020    0.0227   -0.0051   -0.0045   -0.0043
   -0.0183   -0.0051    0.0278    0.0107    0.0052
   -0.0172   -0.0045    0.0107    0.0202    0.0124
   -0.0008   -0.0043    0.0052    0.0124    0.0206 ];

% Demand (MW)
Pd= 513.465 ;

ObjectiveFunction=@eldnba1;
dim=length(data(:,1));
lb=0;
ub=1;
obj_no=1;

if size(ub,2)==1
    ub=ones(1,dim)*ub;
    lb=ones(1,dim)*lb;
end
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

% Initial parameters of the MODA algorithm
max_iter=50;
N=10;
ArchiveMaxSize=100;

Archive_X=zeros(100,dim);
Archive_F=ones(100,obj_no)*inf;

Archive_member_no=0;

r=(ub-lb)/2;
V_max=(ub(1)-lb(1))/10;

Elite_fitness=inf*ones(1,obj_no);
Elite_position=zeros(dim,1);
```

```
Ant_Position=initialization(N,dim,ub,lb);
fitness=zeros(N,2);

V=initialization(N,dim,ub,lb);
iter=0;

position_history=zeros(N,max_iter,dim);

for iter=1:max_iter

    for i=1:N %Calculate all the objective values first
        Particles_F(i,:)=ObjectiveFunction(Ant_Position(:,i)');
        if dominates(Particles_F(i,:),Elite_fitness)
            Elite_fitness=Particles_F(i,:);
            Elite_position=Ant_Position(:,i);
        end
    end

    [Archive_X, Archive_F,
Archive_member_no]=UpdateArchive(Archive_X, Archive_F,
Ant_Position, Particles_F, Archive_member_no);

    if Archive_member_no>ArchiveMaxSize
        Archive_mem_ranks=RankingProcess(Archive_F,
ArchiveMaxSize, obj_no);
        [Archive_X, Archive_F, Archive_mem_ranks,
Archive_member_no]=HandleFullArchive(Archive_X, Archive_F,
Archive_member_no, Archive_mem_ranks, ArchiveMaxSize);
    else
        Archive_mem_ranks=RankingProcess(Archive_F,
ArchiveMaxSize, obj_no);
    end

    Archive_mem_ranks=RankingProcess(Archive_F, ArchiveMaxSize,
obj_no);

    % Chose the archive member in the least population area as
arrtactor
    % to improve coverage
    index=RouletteWheelSelection(1./(Archive_mem_ranks+1e-20));
    if index==-1
        index=1;
    end
    Elite_fitness=Archive_F(index,:);
    Elite_position=Archive_X(index,:)';

    Random_antlion_fitness=Archive_F(1,:);
    Random_antlion_position=Archive_X(1,:)';

    for i=1:N

        index=0;
        neighbours_no=0;
```

```
        RA=Random_walk_around_antlion(dim,max_iter,lb,ub,
Random_antlion_position',iter);

        [RE]=Random_walk_around_antlion(dim,max_iter,lb,ub,
Elite_position',iter);

        Ant_Position(:,i)=(RE(iter,:)'+RA(iter,:)')/2;


        Flag4ub=Ant_Position(:,i)>ub';
        Flag4lb=Ant_Position(:,i)<lb';

Ant_Position(:,i)=(Ant_Position(:,i).*(~(Flag4ub+Flag4lb)))+ub'.*F
lag4ub+lb'.*Flag4lb;

    end
    %display(['At the iteration ', num2str(iter), ' there are ',
num2str(Archive_member_no), ' non-dominated solutions in the
archive']);
 K(iter)=Elite_fitness;
 end
[F, P, Pl ]=eldnba(Elite_position)
```