1. IWO.m

DataDim=15;

PosMin=-20\*ones(1,DataDim);

PosMax=20\*ones(1,DataDim);

PosRange=[PosMin; PosMax];

Functname='Fitness';

IterNo=300;

Smax=3;Smin=1;

pop\_max=40;

[OUT1,gbest1,gbestval1]=IWO(Functname,DataDim,PosRange,IterNo,Smax,Smin,pop\_max);

plot(OUT1);

return;

1. Text-Elastic Modulus.py

import sys

import pymysql.cursors

import os

import numpy as np

import matplotlib.pyplot as plt

import pandas as pd

F\_list=[];E\_list=[]

def check\_data():

db = pymysql.connect(host = "localhost",port = 3306,user = "root",password = "",db="text-elastic-modulus")

cur = db.cursor()

sql\_F = "select F from sheet1;"

cur.execute(sql\_F)

results\_F = cur.fetchall()

global F\_list

for row in results\_F:

F\_list.append(float(row[0]))

print(F\_list)

sql\_E= "select E from sheet1;"

cur.execute(sql\_E)

results\_E=cur.fetchall()

global E\_list

for datas in results\_E:

E\_list.append(float(datas[0]))

print(E\_list)

plt.figure()

plt.plot(F\_list,E\_list,'g')

plt.show()

db.commit()

db.close()

if \_\_name\_\_=="\_\_main\_\_":

check\_data()

1. Text-Question2-injector.py

import sys

import pymysql.cursors

import os

import numpy as np

import matplotlib.pyplot as plt

import pandas as pd

ms\_list=[];mm\_list=[]

def check\_data():

db = pymysql.connect(host = "localhost",port = 3306,user = "root",password = "",db="text-elastic-modulus")

cur = db.cursor()

sql\_ms = "select 1\_ms from sheet1\_injector\_1;"

cur.execute(sql\_ms)

results\_ms = cur.fetchall()

global ms\_list

for row in results\_ms:

ms\_list.append(float(row[0]))

print(ms\_list)

sql\_mm= "select 1\_mm from sheet1\_injector\_1;"

cur.execute(sql\_mm)

results\_mm=cur.fetchall()

global mm\_list

for datas in results\_mm:

mm\_list.append(float(datas[0]))

print(mm\_list)

plt.figure()

plt.plot(ms\_list,mm\_list,'g')

plt.show()

db.commit()

db.close()

if \_\_name\_\_=="\_\_main\_\_":

check\_data()

1. Text\_Function2\_Question2.m

clear all;clc;

load r\_len.mat

load theta.mat

pa=[];rou=[];E=[];

for j=1:518

rou=[rou,0.85+(j\*2.5097\*10^(-5))];

pa=[pa,100+0.4983\*j];

E=[E,2171.4+2.3590\*j];

j=j+1;

end

W\_results=[];

for i=2:518

W\_results\_row=(2.413+pi\*(r\_len(1,i)\*theta(1,i)-r\_len(i-1)\*theta(i-1))\*pi+2.413\*pi)/((2\*(pi^2)\*((r\_len(1,i-1)^2)-(r\_len(1,i-1)^2)-(r\_len(1,i-1)))/628)-0.85\*(0.7^2)\*((2\*E(1,i-1)\*pi)/628)\*sqrt((2\*(pa(1,i-1)-100))/rou(1,i-1)));

if W\_results\_row>0

W\_results=[W\_results,W\_results\_row];

else

W\_results=[W\_results];

end

i=i+1;

end

[lie,hang]=size(W\_results);

W\_results\_true=[W\_results(1,1)];

% 内存炸了。

% for t=2:hang

% W\_results\_true=[W\_results\_true,W\_results(1,t)+W\_results\_true];

% t=t+1;

% end

Qt=[];

for k=1:258

Qt=[Qt,k\*0.005];

k=k+1;

end

disp(W\_results)

plot(Qt,W\_results)

syms x;

f=1/(int((-338)\*(x^9)+2096\*(x^8)-5507\*(x^7)+7980\*(x^6)-6958\*(x^5)+3738\*(x^4)-1218\*(x^3)+228.3\*(x^2)-21.33\*x+1.26,0,1.29));

f=vpa(f,4);

disp(f)

1. Question1.m

clear all;clc;

load E\_3.mat

load P\_3.mat

% syms t

% P\_total=[];

% P\_1=((E\_3(1,1)/0.85)\*(0.85\*t)\*(0.7)^2\*sqrt(((2\*(100+50/20-100))/0.85)-0.85\*44))/(12500\*pi);

% P\_total=[P\_total,P\_1];

% for i =2:20

% P\_2=((E\_3(1,i)/0.85)\*(0.85\*t)\*(0.7)^2\*sqrt(((2\*(100+50/20-100))/0.85)-0.85\*44))/(12500\*pi);

% P\_2=P\_2-P\_1;

% disp(P\_2)

% P\_total=[P\_total,P\_2];

% P\_2=[];

% i=i+1;

% end

% disp(P\_total)

P\_0=((E\_3(1,1)/0.85)\*(0.85\*0.1)\*(0.7)^2\*sqrt(((2\*(100+50/20-100))/0.85)-0.85\*44))/(12500\*pi);

v\_B=[];V\_B=[];P\_total\_imag=[];

for t=0:240

if t>=0 && t<=20

v\_B\_i=t;

v\_B=[v\_B,v\_B\_i];

elseif t>20 && t<=220

v\_B\_i=20;

v\_B=[v\_B,v\_B\_i];

elseif t>220 && t<=240

v\_B\_i=-1\*t+240;

v\_B=[v\_B,v\_B\_i];

end

v\_B\_i=[];

t=t+1;

end

for T=0:240

if T>=0 && T<=20

V\_B\_i=(1/200)\*T;

V\_B=[V\_B,V\_B\_i];

elseif T>20 && T<=220

V\_B\_i=0.2\*T-2;

V\_B=[V\_B,V\_B\_i];

elseif T>220 && T<=240

V\_B\_i=(-1/200)\*(T)^2+2.4\*T-244;

V\_B=[V\_B,V\_B\_i];

end

V\_B\_i=[];

T=T+1;

end

T\_num=20;%change the generations of the dates.

P\_total=[];

P\_1=((E\_3(1,1)/0.85)\*(0.85\*t)\*(0.7)^2\*sqrt(((2\*(100+50/20-100))/0.85)-0.85\*44))/(12500\*pi);

P\_total=[P\_total,P\_1];

for i =2:100

P\_2=((E\_3(1,i)/(0.85+0.13\*i))\*((0.85+0.13\*i)\*t)\*(0.7)^2\*sqrt(((2\*(100+50/20-100))/(0.85+0.13\*i))-(0.85+0.13\*i)\*44))/(12500\*pi);

%P\_2=P\_2-P\_1;

P\_total=[P\_total,P\_2];

P\_2=[];

i=i+1;

end

[lie,hang]=size(P\_total);

for imag\_num=1:hang

P\_total\_imag=[P\_total\_imag,(imag(P\_total(1,imag\_num))/5)];%change the datas.

imag\_num=imag\_num+1;

end

Qt=[];

for qt=1:100

Qt=[Qt,qt];

qt=qt+1;

end

x=Qt;y=P\_total\_imag;

plot(Qt,P\_total\_imag)

disp(P\_total\_imag)

1. Text\_Question3\_function.m

clear all;clc;

syms x;

t=[];

for i=1:90

t=[t,i\*0.01];

end

f=[];

for j=1:90

if t(1,j)>=0 && t(1,j)<=0.45

f\_j=2.01\*exp(-((t(1,j)-0.4543)/0.1655)^2);

f=[f,f\_j];

elseif t(1,j)>=0.45 && t(1,j)<=0.9

f\_j=2.017\*exp(-(((t(1,j))-0.443)/0.1661)^2);

f=[f,f\_j];

end

j=j+1;

end

f\_results\_1=int((pi/3)\*(tan(9)^2)\*((((0.7/tan(9))+(2.01\*exp(-((x-0.4543)/0.1655)^2)))^3)-(0.7/tan(9))^3),0,0.45);

f\_results\_1=f\_results\_1\*0.85;

f\_results\_2=int((pi/3)\*(tan(9)^2)\*((((0.7/tan(9))+(2.017\*exp(-((x-0.443)/0.1661)^2)))^3)-(0.7/tan(9))^3),0,0.45);

f\_results\_2=f\_results\_2\*0.85;

f\_results=[vpa(f\_results\_1,4)+vpa(f\_results\_2,4)];%变化区域的总面积计算：Dv\*delta(t)

syms T;%恒定增量随时间而速率恒定（B1,B2）

f\_results\_T=int((pi/3)\*(tan(9)^2)\*((((0.7/tan(9))+2\*T)^3)-(0.7/tan(9))^3),0.45,T+0.45);

f\_results=[f\_results+(f\_results\_T)\*0.85+0.5403];

% W=1.595e-50\*T\*(2.284e49\*(T)^3 - 2.958e49\*(T)^2 + 1.437e49\*T + 3.922e49) + 0.8562;

disp(vpa(f\_results,4))

1. Text\_Enreances.m

clear all;clc;

%syms p q

%f1=log(p)/log(q);

%v=int(f1,p,q);

%disp(v)

%syms pa

%E=1489\*exp(0.00284\*pa)+48.79\*exp(0.01376\*pa);

%k\_100MPa=(1489\*exp(0.00284\*100)+48.79\*exp(0.01376\*100))/0.85;

%rou=E/k\_100MPa;%假设这里的燃油系数k在管道弹性限度内不发生任何改变

syms x

f=1476\*exp(0.00401\*x);

k=int(f,x);

disp(k)

% x = linspace(1:1000:100);

% f=[];

% for i =x

% f =[1476\*exp(0.00401\*i), f];

% end

%a=(147600000\*exp((401\*100)/100000))/401;

%disp(a)