**MATLAB Command History since 11/4/17**

**ANN Development**

%-- 11/4/2017 2:26 PM --%

load('reachability1.mat')

load('reachability2.mat')

nnstart

test

RobotTest1([0.2 0.2 0.2 0.05 0.200000000000000,0.600000000000000,-0.200000000000000,0.200000000000000,-0.400000000000000,0])

RobotTest1([0.135540426407628,0.272771613665478,0.635643507130864,0.0806187918425097,0.200000000000000,0.600000000000000,-0.200000000000000,0.200000000000000,-0.400000000000000,0])

round(ans)

h=ans

SimpleTask

nnstart

SimpleTask

M.maniplty([NaN NaN NaN NaN NaN NaN])

SimpleTask

M.maniplty(intm)

a=M.maniplty(intm)

SimpleTask

load('reachability1.mat')

load('reachability2.mat')

pf=inputMatrix(:,1:4)

nnstart

SimpleTask

%-- 11/4/2017 3:41 PM --%

load('reachability2.mat')

load('321.mat')

nnstart

mdl\_puma560

a=p560.maniplty(qz)

a=p560.maniplty(qn)

a=p560.maniplty(qn,'all')

AverageConvHullVolume

clear all

load('reachability2.mat')

load('321.mat')

load('reachability1.mat')

%-- 11/4/2017 4:00 PM --%

load('reachability2.mat')

load('321.mat')

nnstart

clear all

load('321.mat')

load('reachability2.mat')

a=performanceMatrix'

b=pf'

nnstart

RobotTest1([0.135540426407628,0.272771613665478,0.635643507130864,0.0806187918425097,0.200000000000000,0.600000000000000,-0.200000000000000,0.200000000000000,-0.400000000000000,0])

a=RobotTest1([0.1,0.2,0.6,0.08,0.2,0.6,-0.2,0.2,-0.4,0])

be=RobotTest1([0.1,0.2,0.6,0.08,0.2,0.6,-0.2,0.2,-0.4,0])

be=round(a)

SimpleTask

a=RobotTest1([0.1,0.2,0.6,0.08,0.2,0.6,-0.2,0.2,-0.4,0])

b=round(a)

b==perfornamceMatrix

b==perforamanceMatrix

b==performanceMatrix

SimpleTask

a=RobotTest1([0.1,0.2,0.6,0.08,0.2,0.6,-0.2,0.2,-0.4,0])

b=round(a)

b==performanceMatrix

b=round(a,2)

b=round(a,1)

b=round(a)

b==performanceMatrix

a=RobotTest1([0.1,0.2,0.6,0.08,0.2,0.6,-0.2,0.2,-0.4,0])

b=round(a,3)

b=round(a,2)

b=round(a,1)

round(a)

b==performanceMatrix

b=round(a,1)

round(a)

b==performanceMatrix

clear all

load('reachability1.mat')

load('reachability2.mat')

clear all

%-- 11/4/2017 4:40 PM --%

load('reachability1.mat')

load('reachability2.mat')

nnstar

nnstart

a=RobotTest2([0.1,0.2,0.6,0.08,0.2,0.6,-0.2,0.2,-0.4,0])

SimpleTask

b=round(a,1)

a=RobotTest2([0.1,0.2,0.6,0.08,0.2,0.6,-0.2,0.2,-0.4,0])

b=round(a)

b==performanceMatrix

100-(sum(ans))/100

SimpleTask

inputVector

SimpleTask

clear all

SimpleTask

d(1)=[];

d(1:10)=[];

mean(d)

%-- 11/4/2017 4:58 PM --%

load('reachability1.mat')

load('reachability2.mat')

nnstart

RobotTest3(ones(125))

RobotTest2(ones(125))

SimpleTask

mean(d)

SimpleTask

drrr

SimpleTask

nnstart

SimpleTask

mean(d)

SimpleTask

mean(d)

t4test

mean(d)

t4test

mean(d)

t4test

mean(d)

t4test

mean(d)

SimpleTask

mean(d)

min(d)

plot(1:1000,d)

scatter(1:1000,d)

scatter(1:1000,d,'filled')

round(rand(),1)

SthABitMoreComplex

mean(d)

scatter(1:1000,d,'filled')

scatter(1:100,d,'filled')

load('maniplty.mat')

load('mixedin1.mat')

load('mixedout1.mat')

nnstart

SthABitMoreComplex

mean(d)

min(d)

load('mixedout1.mat')

load('mixedin1.mat')

in=inputMatrix(1:1000,:)

out=perfornamceMatrix(1:1000,:)

out=performanceMatrix(1:1000,:)

nnstart

SthABitMoreComplex

mean(d)

min(d)

%-- 11/4/2017 9:01 PM --%

load('mixedout1.mat')

load('mixedin1.mat')

nnstart

SthABitMoreComplex

mean(d)

min(d)

%-- 11/4/2017 9:08 PM --%

load('mixedout1.mat')

load('mixedin1.mat')

nnstart

SthABitMoreComplex

mean(d)

min(d)

plot(1:100,d)

scatter(1:100,d)

scatter(1:100,d,'filled')

load('mixedin1.mat')

load('mixedout1.mat')

in=inputMatrix(1:1000,:)

out=performanceMatrix(1:1000,:)

nnstart

SthABitMoreComplex

mean(d)

min(d)

scatter(1:100,d,'filled')

load('mixedout1.mat')

load('mixedin1.mat')

nnstar

nnstart

SthABitMoreComplex

mean(d)

min(d)

scatter(1:100,d,'filled')

nnstart

load('mixedin1.mat')

load('maniplty.mat')

load('mixedout1.mat')

SthABitMoreComplex

mean(d)

min(d)

SthABitMoreComplex

mean(d)

min(d)

SthABitMoreComplex

mean(d)

min(d)

load('mixedin1.mat')

load('mixedout1.mat')

%-- 11/4/2017 10:01 PM --%

load('mixedin1.mat')

load('mixedout1.mat')

nnstart

d、

%-- 11/4/2017 10:07 PM --%

load('mixedout1.mat')

load('mixedin1.mat')

in=inputMatrix(1:500,:)

out=performanceMatrix(1:500,:)

nnstart

mdl\_puma560

Neur8([0.1501,0.4318,0.4318,0.0203,0.2,0.6,-0.2,0.2,-0.4,0])

a=round(ans)

nnstart

SthABitMoreComplex

mean(d)

min(d)

load('mixedout1.mat')

load('mixedin1.mat')

in=inputMatrix(1:500,:)

out=performanceMatrix(1:500,:)

nnstart

SthABitMoreComplex

mean(d)

min(d)

%-- 11/4/2017 10:58 PM --%

load('mixedin1.mat')

load('mixedout1.mat')

in

in=inputMatrix(1:5000,:)

out=performanceMatrix(1:5000,:)

nnstart

SthABitMoreComplex

mean(d)

min(d)

scatter(1:200,d)

%-- 11/5/2017 9:26 AM --%

LevelingUp

nnstart

LevelingUp

mean(d)

min(d)

scatter(1:200,d)

scatter(1:100,d)

LevelingUp

nnstart

%-- 11/5/2017 2:19 PM --%

nnstart

load('2111.mat')

load('2112.mat')

nnstart

LevelingUp

mean(d)

min(d)

for i =1:numData

a=mani1(inputMatrix(i,:));

b=round(a,2);

c=sum(b==performanceMatrix(i,:))/125;

d=[d,c];

end

mean(d)

min(d)

for i =1:numData

a=mani1(inputMatrix(i,:));

b=round(a,1);

c=sum(b==performanceMatrix(i,:))/125;

d=[d,c];

end

mean(d)

min(d)

nnstart

%-- 11/5/2017 2:32 PM --%

load('2111.mat')

load('2112.mat')

nnstart

out=performanceMatrix(1:5000,:)

in=inputMatrix(1:5000,:)

nnstart

LevelingUp

mean(d)

min(d)

round(a,2)

round(ans,2)

round(a,1)

for i =1:numData

a=mani2(inputMatrix(i,:));

b=round(a,1);

c=sum(b==performanceMatrix(i,:))/125;

d=[d,c];

end

mean(d)

min(d)

scatter(1:200,d)

scatter(1:200,d,'filled')

d=[]

for i =1:numData

a=mani2(inputMatrix(i,:));

b=round(a,1);

c=sum(b==performanceMatrix(i,:))/125;

d=[d,c];

end

mean(d)

min(d)

performance(94,:)

performanceMatrix(94,:)

performanceMatrix(95,:)

test1=performanceMatrix(95,:)

mani2([0.121001250656423,0.892048430682495,0.808905933549573,0.0909524071228302,0.200000000000000,0.600000000000000,-0.200000000000000,0.200000000000000,-0.400000000000000,0])

test2=mani2([0.121001250656423,0.892048430682495,0.808905933549573,0.0909524071228302,0.200000000000000,0.600000000000000,-0.200000000000000,0.200000000000000,-0.400000000000000,0])

test11=round(test1,1)

test12=round(test2,1)

LevelingUp

%-- 11/5/2017 4:24 PM --%

iris\_dataset

[x,t]=ans

Network1

yeastdata.mat

yeastdata

load yeastdata.mat

net=selforgmap([10,125])

simplecluster\_dataset

clear all

net=patternnet([5 10]);

view(net)

load('reachability1.mat')

load('reachability2.mat')

net=patternnet([25 25 125 125])

net=net(train,inputMatrix,performanceMatrix)

net=train(net,inputMatrix,performanceMatrix)

net=train(net,inputMatrix',performanceMatrix')

nnstart

net=patternnet([24 24 48 48 125 125])

net.epochs=10000

net.epoch=10000

net.trainParam.epochs=10000

net=train(net,inputMatrix',performanceMatrix')

net.getfunction()

genFunction(net)

load('reachability2.mat')

load('reachability1.mat')

SimpleTask

ner1(inputMatrix)

ner1(inputMatrix')

a=ner1(inputMatrix);

b=round(a');

c=sum(b==performanceMatrix(i,:))/125;

d=[d,c];

mean(d)

a=ner1(inputMatrix);

b=round(a');

c=sum(b==performanceMatrix)/125;

d=[d,c];

a=ner1(inputMatrix');

b=round(a);

c=sum(b==performanceMatrix)/125;

b=round(a');

c=sum(b==performanceMatrix)/125;

mean(c)

SimpleTask

mean(c)

net=patternnet([24 48 48])

net.trainParam.epochs=10000

load('reachability1.mat')

load('reachability2.mat')

net=train(net,inputMatrix',performanceMatrix')

net=patternnet([24 48])

net.trainParam.epochs=10000

net=train(net,inputMatrix',performanceMatrix')

nnstart

%-- 11/5/2017 8:23 PM --%

load('reachability2.mat')

load('reachability1.mat')

nnstart

load('hopeThisWorks2.mat')

load('hopeThisWorks1.mat')

%-- 11/5/2017 8:31 PM --%

load('hopeThisWorks1.mat')

load('hopeThisWorks2.mat')

nnstart

performanceMatrix=performanceMatrix.\*1e-4

performanceMatrix=performanceMatrix.\*1e-2

nnstart

LevelingUp

d=[];

for i =1:numData

a=ner2(inputMatrix(i,:));

b=round(a,1);

c=sum(b==performanceMatrix(i,:).\*1e-6)/125;

d=[d,c];

end

mean(d)

min(d)

scatter(1:100,d,'filled')

%-- 11/5/2017 8:40 PM --%

load('hopeThisWorks1.mat')

load('hopeThisWorks2.mat')

nnstart

out=performanceMatrix.\*1e-6

out=performanceMatrix.\*5e-5

out=performanceMatrix.\*1e-6

LevelingUp

mean(d)

min(d)

for i =1:numData

a=ner2(inputMatrix(i,:));

b=round(a,3);

c=sum(b==performanceMatrix(i,:).\*1e-6)/125;

d=[d,c];

end

mean(d)

for i =1:numData

a=ner2(inputMatrix(i,:));

b=round(a,2);

c=sum(b==performanceMatrix(i,:).\*1e-6)/125;

d=[d,c];

end

d=[d,c];

out=sigmd(performanceMatrix)

out=sigmf(performanceMatrix)

out=sigmf(performanceMatrix,[1, 1000])

out=sigmf(performanceMatrix,[1, 500])

out=sigmf(performanceMatrix,[1, 200])

out=sigmf(performanceMatrix,[1, 50])

out=sigmf(performanceMatrix,[1, 5000])

out=sigmf(performanceMatrix,[1, 8000])

out=sigmf(performanceMatrix,[50, 8000])

out=sigmf(performanceMatrix,[100, 8000])

out=sigmf(performanceMatrix,[500, 8000])

out=sigmf(performanceMatrix,[.5, .8])

load('hopeThisWorks1.mat')

load('hopeThisWorks2.mat')

out=sigmf(performanceMatrix,[.5, .5])

out=sigmf(performanceMatrix,[2, .5])

out=sigmf(performanceMatrix,[1, 1])

for i=1:10000

if all(performanceMatrix(i,:)==0)

performanceMatrix(i,:)=[];

end

end

load('hopeThisWorks2.mat')

for i=1:10000

if all(performanceMatrix(1,:)==0)

performanceMatrix(i,:)=[];

end

end

for i=1:10000

if all(performanceMatrix(i,:)==0)

performanceMatrix(i,:)=[];

end

end

load('mixedin1.mat')

load('mixedout1.mat')

load('reachability1.mat')

load('reachability2.mat')

load('reach2.mat')

load('reach1.mat')

nnstart

SimpleTask

mean(d)

min(d)

%-- 11/5/2017 8:59 PM --%

load('reach2.mat')

load('reach1.mat')

nnstart

SimpleTask

scatter(1:500,d,'filled')

all(d=1)

all(d==1)

sum(d==1)

sum(d>0.95)/500

sum(d>0.90)/500

sum(d>0.75)/500

%-- 11/5/2017 9:23 PM --%

load('reachability2.mat')

load('reachability1.mat')

nnstart

SimpleTask

mean(d)

min(d)

scatter(1:500,d,'filled')

sum(d>0.95)/500

sum(d>0.90)/500

%-- 11/5/2017 9:33 PM --%

load('mixedin1.mat')

load('mixedout1.mat')

load('reachability1.mat')

load('reachability2.mat')

nnstart

nftool

fitnet([25 25],trainscg)

fitnet([25 25],'trainscg')

net=ans

train(net,inputMatrix,performanceMatrix)

train(net,inputMatrix',performanceMatrix')

genFunction(net)

SimpleTask

a=neural1(inputMatrix');

neural1(inputMatrix');

load('neural1.mat')

train(net,inputMatrix',performanceMatrix')

net=ans

train(net,inputMatrix',performanceMatrix')

load('reachability2.mat')

load('reachability1.mat')

train(net,inputMatrix',performanceMatrix')

load('reachability2.mat')

load('reachability1.mat')

fit

fitnet([25 25],'trainscg')

net=ans

net=fitnet([25 25],'trainscg')

train(net,inputMatrix',performanceMatrix')

net=ans

genFunction(net)

SimpleTask

mean(d)

b==performanceMatrix

sum(ans)

for i=1:numData

c=sum(b(:,1)==performanceMatrix)/125;

d=[d,c];

end

SimpleTask

mean(c)

for i=1:numData

c=sum(b(i,:)==performanceMatrix)/125;

d=[d,c];

end

for i=1:numData

c=sum(b(i,:)==performanceMatrix(i,:))/125;

d=[d,c];

end

mean(d)

d=[];

for i=1:numData

c=sum(b(i,:)==performanceMatrix(i,:))/125;

d=[d,c];

end

mean(d)

min(d)

net=fitnet([25 50 125],'trainscg')

load('reachability1.mat')

load('reachability2.mat')

scatter(1:500,d,'filled')

net=train(net,inputMatrix',performanceMatrix)

net=train(net,inputMatrix',performanceMatrix')

sum(d>0.90)/500

genFunction(net)

SimpleTask

mean(d)

min(d)

d=[]

a=neural5(inputMatrix');

b=round(a');

for i=1:numData

c=sum(b(i,:)==performanceMatrix(i,:))/125;

d=[d,c];

end

mean(d)

load('mixedin1.mat')

load('mixedout1.mat')

net=fitnet([25 50 50 125 125],'trainscg')

net=train(net,inputMatrix',performanceMatrix')

net.trainParam.epochs=10000

net=train(net,inputMatrix',performanceMatrix')

genFunction(net)

SthABitMoreComplex

mean(d)

min(d)

d=[];

a=neural4(inputMatrix');

b=round(a',3);

for i=1:numData

c=sum(b(i,:)==performanceMatrix(i,:))/125;

d=[d,c];

end

mean(d)

min(d)

a=neural4(inputMatrix');

b=round(a');

for i=1:numData

c=sum(b(i,:)==performanceMatrix(i,:))/125;

d=[d,c];

end

d=[]

a=neural4(inputMatrix');

b=round(a');

for i=1:numData

c=sum(b(i,:)==performanceMatrix(i,:))/125;

d=[d,c];

end

figure

scatter(1:500,d,'filled')

sum(d>0.90)/500

show(net)

view(net)

%-- 11/6/2017 6:49 AM --%

load('mixedout1.mat')

load('mixedin1.mat')

load('2111.mat')

load('2112.mat')

load('2111.mat')

nnstart

mdl\_puma560

neural4([0.1501 0.4318 0.4318 0.0203 0.2 0.6 -0.2 0.2 -0.4 0])

round(ans)

neural4([0.906379277520205,0.300349203602036,0.808264290957217,0.0292062188992439,0.200000000000000,0.600000000000000,-0.200000000000000,0.200000000000000,-0.400000000000000,0])

round(ans)

ans=performanceMatrix(1,:)

neural2([0.1501 0.4318 0.4318 0.0203 0.2 0.6 -0.2 0.2 -0.4 0])

neural5([0.1501 0.4318 0.4318 0.0203 0.2 0.6 -0.2 0.2 -0.4 0])

neural5([0.1501 0.4318 0.4318 0.0203 0.2 0.6 -0.2 0.2 -0.4 0]')

neural4([0.1501 0.4318 0.4318 0.0203 0.2 0.6 -0.2 0.2 -0.4 0]')

round(ans)

neural4([0.1501 0.4318 0.4318 0.0203 -0.2 0.2 -0.6 -0.2 -0.2 0.2]')

round(ans)

fitnet([24 48 125 125 250 250 250],'trainscg')

net=ans

net.trainParam.epochs=10000

load('hopeThisWorks1.mat')

load('hopeThisWorks2.mat')

net=train(net,inputMatrix',performanceMatrix')

genFunction(net)

LevelingUp

w=round(performanceMatrix/100)\*100

w2=round(b/100)\*100

w=w2

w=round(performanceMatrix/100)\*100

w==w2

w=round(performanceMatrix/1000)\*1000

w2=round(b/1000)\*1000

w==w2

sum(w==w1)

sum(w==w2)

net=train(net,inputMatrix',performanceMatrix')

load('hopeThisWorks1.mat')

clear all

load('hopeThisWorks1.mat')

LevelingUp

net116(inputMatrix(1:2,:)')

w=ans'

plot(performanceMatrix(1,:),w(1,:))

scatter(performanceMatrix(1,:),w(1,:))

scatter(performanceMatrix(1,:),w(1,:),'filled')

fitlm(performanceMatrix(1,:),w(1,:))

load('NewNet.mat')

net=train(net,inputMatrix',performanceMatrix')

w=net116(inputMatrix')

w2=(w2-3.6e+2)/0.97

w2=(w-3.6e+2)/0.97

w2=(w\*0.97+3.6e+2)

w2=w2'

w2=round(w2/100)\*100

w2=round(w2/1000)\*1000

w2=(w\*0.97+3.6e+2)

w2=w2'

for i= 1:100

for j=1:125

if w2(i,j)<1000

w2(i,j)=0

end

end

end

%-- 11/6/2017 6:10 PM --%

LevelingUp

w=net116(inputMatrix')

w=w'

for i=1:100

for j=1:125

if w(i,j)<1000

w(i,j)=0;

end

end

end

scatter(w(1,:),performanceMatrix(1,:))

scatter(w(2,:),performanceMatrix(3,:))

scatter(w(2,:),performanceMatrix(2,:))

scatter(w(2,:),performanceMatrix(2,:),'filled')

fitlm(w(2,:),performanceMatrix(2,:))

e=ans

e.rSquared

e.Rsquared

e.Rsquared.adjusted

LevelingUp

w=net116(inputMatrix')

w=w'

for i=1:100

for j=1:125

if w(i,j)<1000

w(i,j)=0;

end

end

end

d=[];

fitting

plot(1:500,d)

scatter(1:500,d,'filled')

mean(d)

scatter(w(2,:),performanceMatrix(2,:)）

scatter(w(2,:),performanceMatrix(2,:))

d=[]

fitting

fitting

d=[]

fitting

d=[]

fitting

sum(w(i,:)==0)

sum(w(2,:)==0)

fitting

d=[]

fitting

scatter(w(2,:),performanceMatrix(2,:))

scatter(1:500,d)

scatter(1:500,d,'filled')

mean(d)

for i=1:500

if d(1,i)==NaN;

d(1,i)=0;

end

end

mean(d)

for i=1:500

if d(1,i)==NaN;

d(1,i)=0;

end

end

for i=1:500

if isnan(d(1,i));

d(1,i)=0;

end

end

mean(d)

min(d)

scatter(1:500,d,'filled')

fitting

for i=1:500

if isnan(d(i));

d(i)=[];

end

end

scatter(1:359,d,'filled')

mean(d)

min(d)

%-- 11/6/2017 9:35 PM --%

[1 2]\*[1 2;3 4]

load('reachability2.mat')

load('reachability1.mat')

load('reachability2.mat')

GPUParal Demo

GPUParalDemo

y

Nadlab4

total=a(:,23:24)

total=a(1:45,23:24)

total=total'

trapz(total)

plot(total)

plot(total')

plot(1:45,total(2,:))

sum(trapz(total))

cumtrapz(total))

cumtrapz(total)

cumtrapz(total(2,:))

cumtrapz(total(1,:),total(2,:))

people (cumtrapz(total(1,:),total(2,:)))

people =(cumtrapz(total(1,:),total(2,:)))

plot(people)

integral(total(2,:))

trapz(total(2,:))

cumtrapz(total(2,:))

max(ans)

scatter(people)

scatter(1:45,people)

figure

plot(total(1,:),total(2,:))

plot(total(1,:),total(2,:),'-o')

t=total(2,:)

fitx=linspace(0,45,200)

fity=interp1(0:45,[0 t],fitx,'spline')

plot(fitx,fity)

plot(fitx,fity,'-o','filled')

plot(fitx,fity,'-o')

plot(fitx,fity,'-o','linewidth',2,'markersize',1,'markerfacecolor','r')

plot(fitx,fity,'-o','linewidth',2,'markersize',5,'markerfacecolor','r')

plot(fitx,fity,'-o','linewidth',2)

plot(fitx,fity,'linewidth',2)

hold on

scatter(0:45,[0 t],'markersize',5,'markerfacecolor','r')

scatter(0:45,[0 t],5,'markerfacecolor','r')

scatter(0:45,[0 t],25,'markerfacecolor','r')

hold on

plot(fitx,fity,'linewidth',2)

plot(fitx,fity,'linewidth',2,'b')

plot(fitx,fity,'b'.'linewidth',2)

plot(fitx,fity,'b','linewidth',2)

hold on

scatter(0:45,[0 t],25,'markerfacecolor','r')

Nadlab4

hold on

cumtrapz(total(2,:))

plot(0:45,[0 ans])

grid on

Nadlab4

hold off

legend("r(t)","s(t)")

Nadlab4

legend('show')

Nadlab4

legend([a1 a2])

title('Rate of People Entering Dining Hall Serving Area

')

title('Rate and Number of People Entering Dining Hall Serving Area')

Nadlab4

hold on

area(fitx,fity)

area(fitx,fity,'alpha',75)

Nadlab4

set(a1,"EdgeColor",'none')

Nadlab4

fitx=linspace(0,45,400)

fity

fity=interp1(0:45,[0 t],fitx,'spline')

Nadlab4

1:size(p,2)

num2str(p(:,2))

c=cellstr(ans)

Nadlab4

num2str(p(:,2))

Nadlab4

t1=a(1:45,20)

Nadlab4

DoorC

DoorAB

%-- 11/10/2017 9:51 PM --%

DoorAB

DoorC

mdl\_puma560

p560.ikine6s(1)

angle(pi)

NEML11

809376^2-809376

NEML11

%-- 11/20/2017 8:44 PM --%

GuildPaper

GuildPaper

axis([-1.5 1.5 -1.5 1.5 -1.5 1.5])

GuildPaper

axis([-1.5 2 -1.5 1.5 -1.5 1.5])

axis([-1 2 -1 2 -1.5 1.5])

axis([-0.5 1.5 -1 2 -1.5 1.5])

axis([-0.5 1.5 -.5 1.5 -1.5 1.5])

axis([-0.5 1.5 -.5 1.5 -1.5 1])

GuildPaper

trplot(1)

GuildPaper

figure

GuildPaper

figure

p560.plot(qs)

GuildPaper

figure

p560.plot(qn)

axis([-0.5 1.5 -.5 1.5 -1.5 1])

GuildPaper

subplot(1,2,2)

GuildPaper

p560.plot(qz)

p560.plot(qn)

plot3(1,1,1,'.')

p560.plot(qn)

hold on

plot3(1,1,1,'.')

p560.ikine6s(transl(1,1,1))

scatter3(1,1,1,5,'.')

p560.plot(qn)

scatter3(1,1,1,5)

scatter3(1,1,1,500)

p560.plot(qn)

hold on

scatter3(1,1,1,50,'filled')

scatter3(0.5,0.5,0.5,150,'filled')

p560.plot(p560.ikine6s(transl(0.5,0.5,0.5))))

p560.plot(p560.ikine6s(transl(0.5,0.5,0.5)))

hold on

scatter3(0.5,0.5,0.5,150,'filled')

figure

p560.plot(p560.ikine6s(transl(0.5,0.5,0.5),'d'))

p560.plot(p560.ikine6s(transl(0.5,0.5,0.5),'u'))

hold on

scatter3(0.5,0.5,0.5,350,'filled')

subplot(1,3,1)

p560.plot(p560.ikine6s(transl(0.5,0.5,0.5),'u'))

hold on

scatter3(0.5,0.5,0.5,500,'filled')

subplot(1,3,2)

p560.plot(p560.ikine6s(transl(0.5,0.5,0.5),'d'))

p560.plot(p560.ikine6s(transl(0.5,0.5,0.5),'u'))

scatter3(0.5,0.5,0.5,300,'filled')

p560.plot(p560.ikine6s(transl(0.5,0.5,0.5),'u'))

hold on

scatter3(0.5,0.5,0.5,300,'filled')

figure

p560.plot(p560.ikine6s(transl(0.5,0.5,0.5),'d'))

hold on

scatter3(0.5,0.5,0.5,300,'filled')

p560.plot(qn)

scatter3(0.5,0.5,2,300,'filled')

p560.plot(qn)

hold on

scatter3(0.5,0.5,2,300,'filled')

hold on

scatter3(0.5,0.5,2,300,'filled')

scatter3(1,1,1,300,'filled')

%-- 11/22/2017 5:25 PM --%

D2

for k=1:sizeZ

for j=1:sizeY

parfor i=1:sizeX-1

xData=horzcat(xData,Hijk{i,j,k}(1));

yData=horzcat(yData,Hijk{i,j,k}(2));

zData=horzcat(zData,Hijk{i,j,k}(3));

binMap=horzcat(binMap,Pijk(i,j,k));

end

end

end

scatter3(xData,yData,zData,50,binMap,'filled')

fXData=[];

fYData=[];

fZData=[];

[~,lBin]=size(binMap);

parfor i=1:lBin

if binMap(i)==1

fXData=horzcat(fXData,xData(i));

fYData=horzcat(fYData,yData(i));

fZData=horzcat(fZData,zData(i));

end

end

scatter3(fXData,fYData,fZData,50,'filled')

for k=1:sizeZ

for j=1:sizeY-1

parfor i=1:sizeX-1

xData=horzcat(xData,Hijk{i,j,k}(1));

yData=horzcat(yData,Hijk{i,j,k}(2));

zData=horzcat(zData,Hijk{i,j,k}(3));

binMap=horzcat(binMap,Pijk(i,j,k));

end

end

end

scatter3(xData,yData,zData,50,binMap,'filled')

fXData=[];

fYData=[];

fZData=[];

[~,lBin]=size(binMap);

parfor i=1:lBin

if binMap(i)==1

fXData=horzcat(fXData,xData(i));

fYData=horzcat(fYData,yData(i));

fZData=horzcat(fZData,zData(i));

end

end

scatter3(fXData,fYData,fZData,50,'filled')

scatter3(xData,yData,zData,10,binMap,'filled')

fXData=[];

fYData=[];

fZData=[];

[~,lBin]=size(binMap);

parfor i=1:lBin

if binMap(i)==1

fXData=horzcat(fXData,xData(i));

fYData=horzcat(fYData,yData(i));

fZData=horzcat(fZData,zData(i));

end

end

scatter3(fXData,fYData,fZData,50,'filled')

scatter3(fXData,fYData,fZData,10,'filled')

D2

Pijk(i-1:i+1, j-1:j+1, k-1:k+1)

sum(Pijk(10:12, 10:12, 10:12))

sum(sum(Pijk(10:12, 10:12, 10:12)))

sum(sum(sum(Pijk(10:12, 10:12, 10:12))))

sum(sum(sum(Pijk(12:14, 12:14, 12:14))))

D2

%-- 11/22/2017 6:34 PM --%

D2

save('Data.mat','delPijk','Pijk','Hijk')

201^3

1122

Train

zero(1,2)

zeros(1,2)

Train

Train

%-- 11/22/2017 11:35 PM --%

Train

load('Data.mat')

Train

sum(binMap)

delPijk(122,122,122)

delPijk(122,122,125)

delPijk(122,122,126)

sum(delPijk(122,122,:))

sum(delPijk(:,:,:))

sum(sum(delPijk(:,:,:)))

sum(sum(sum(delPijk(:,:,:))))

Train

scatter3(fXData,fYData,fZData,2,'filled')

for k=2:sizeZ-1

for j=2:sizeY-1

for i=2:sizeX-1

if sum(sum(sum(Pijk(i-1:i+1, j-1:j+1, k-1:k+1))))==27

delPijk(i,j,k)=1;

end

end

end

end

delPijk(:,1,1)

delPijk(:,:,1)

delPijk(:,1,:)

Train

scatter3(fXData,fYData,fZData,2,'filled')

scatter3(fXData,fYData,fZData,2,fZData,'filled')

save('Graph.mat','fXData','fYData','fZData')

D2

D2

D2

while i<=size(fXData)

if all(fXData(i)==0,fYData(i)==0,fZData(i)==0)

fXData(i)=[],

fYData(i)=[],

fZData(i)=[],

end

i=i+1;

end

D2

while ct2<lF

if all([fXData(ct2)==0;fYData(ct2)==0;fZData(ct2)==0])

fXData(ct2)=[];

fYData(ct2)=[];

fZData(ct2)=[];

end

ct2=ct2+1;

[~,lF]=size(fXData);

end

ct2=1

while ct2<lF

if all([fXData(ct2)==0;fYData(ct2)==0;fZData(ct2)==0])

fXData(ct2)=[];

fYData(ct2)=[];

fZData(ct2)=[];

end

ct2=ct2+1;

[~,lF]=size(fXData);

end

ct2=1

while ct2<lF

if all([fXData(ct2)==0;fYData(ct2)==0;fZData(ct2)==0])

fXData(ct2)=[];

fYData(ct2)=[];

fZData(ct2)=[];

end

ct2=ct2+1;

[~,lF]=size(fXData);

end

ct2=1

while ct2<lF

if all([fXData(ct2)==0;fYData(ct2)==0;fZData(ct2)==0])

fXData(ct2)=[];

fYData(ct2)=[];

fZData(ct2)=[];

end

ct2=ct2+1;

[~,lF]=size(fXData);

end

ct2=1

while ct2<lF

if all([fXData(ct2)==0;fYData(ct2)==0;fZData(ct2)==0])

fXData(ct2)=[];

fYData(ct2)=[];

fZData(ct2)=[];

end

ct2=ct2+1;

[~,lF]=size(fXData);

end

ct2=1

while ct2<lF

if all([fXData(ct2)==0;fYData(ct2)==0;fZData(ct2)==0])

fXData(ct2)=[];

fYData(ct2)=[];

fZData(ct2)=[];

end

ct2=ct2+1;

[~,lF]=size(fXData);

end

ct2=1

while ct2<lF

if all([fXData(ct2)==0;fYData(ct2)==0;fZData(ct2)==0])

fXData(ct2)=[];

fYData(ct2)=[];

fZData(ct2)=[];

end

ct2=ct2+1;

[~,lF]=size(fXData);

end

ct2=1

while ct2<lF

if all([fXData(ct2)==0;fYData(ct2)==0;fZData(ct2)==0])

fXData(ct2)=[];

fYData(ct2)=[];

fZData(ct2)=[];

end

ct2=ct2+1;

[~,lF]=size(fXData);

end

ct2=1

while ct2<lF

if all([fXData(ct2)==0;fYData(ct2)==0;fZData(ct2)==0])

fXData(ct2)=[];

fYData(ct2)=[];

fZData(ct2)=[];

end

ct2=ct2+1;

[~,lF]=size(fXData);

end

ct2=1

while ct2<lF

if all([fXData(ct2)==0;fYData(ct2)==0;fZData(ct2)==0])

fXData(ct2)=[];

fYData(ct2)=[];

fZData(ct2)=[];

end

ct2=ct2+1;

[~,lF]=size(fXData);

end

scatter3(fXData,fYData,fZData,2,fZData,'filled')

scatter3(fXData,fYData,fZData,50,fZData,'filled')

D2

scatter3(fXData,fYData,fZData,50,fZData,'filled')

ct2=1;

[~,lF]=size(fXData);

while ct2<lF

if all([fXData(ct2)==0;fYData(ct2)==0;fZData(ct2)==0])

fXData(ct2)=[];

fYData(ct2)=[];

fZData(ct2)=[];

else

ct2=ct2+1;

end

[~,lF]=size(fXData);

end

test=[fXData;fYData;fZData]

for i=1:1201

if sum(test(:,i))==0

a=a+i

end

end

a=[];

for i=1:1201

if sum(test(:,i))==0

a=horzcat(a,i)

end

end

for i=1:1201

if test(:,i)==[0;0;0]

a=horzcat(a,i)

end

end

while ct2<=lF

if all([fXData(ct2)==0;fYData(ct2)==0;fZData(ct2)==0])

fXData(ct2)=[];

fYData(ct2)=[];

fZData(ct2)=[];

else

ct2=ct2+1;

end

[~,lF]=size(fXData);

end

scatter3(fXData,fYData,fZData,50,fZData,'filled')

D2

(((xmax-xmin)/deltaX)+1), (((ymax-ymin)/deltaY)+1), (((zmax-zmin)/deltaZ)+1)

D2

scatter3(fXData,fYData,fZData,50,fZData,'filled')

entry=[-1 1 -1 1 -1 1 0.025 0.025 0.025];

xmin=entry(1);

xmax=entry(2);

ymin=entry(3);

ymax=entry(4);

zmin=entry(5);

zmax=entry(6);

deltaX=entry(7);

deltaY=entry(8);

deltaZ=entry(9);

Pijk=zeros( int32(((xmax-xmin)/deltaX)+1), int32(((ymax-ymin)/deltaY)+1), int32(((zmax-zmin)/deltaZ)+1) );

41^3

a={delPijk,2}

cell(1,100)

{Hijk,1}

D2

clear all

D2

for i=1:sizeZ

area(i)=sum(sum(Pijk(:,:,i)));

end

sum(area)

for i=1:sizeZ

area(i)=sum(sum(Pijk(:,:,i))\*deltaX)\*deltaY;

end

sum(area)\*deltaZ

D2

sum(zeros(3),3)

sum(zeros(3),4)

sum(zeros(3))

sum(zeros(3),1)

sum(zeros(3),0)

D2

0:pi/2:pi

1:sX

angleX(3)

trotx(0)

D2

m.ikine6s( trotx(angleX(a1)) \* troty(angleY(a2)) \* trotz\*(angleZ(a3))\* transl(Hijk{i,j,k}) )

D2

%-- 11/23/2017 5:14 PM --%

D2

sum(Pijk(:,:,1))

figure

p560.plot(qn)

m.plot(qn)

hold on

scatter3(fXData,fYData,fZData,20,fZData,'filled')

D2

scatter3(fXData,fYData,fZData,20,dexMap,'filled')

while ct2<=lF

if all([fXData(ct2)==0;fYData(ct2)==0;fZData(ct2)==0])

fXData(ct2)=[];

fYData(ct2)=[];

fZData(ct2)=[];

dexMap(ct2)=[];

else

ct2=ct2+1;

end

[~,lF]=size(fXData);

end

D2

figure

m.plot(qn);

hold on;

scatter3(fXData,fYData,fZData,5,dexMap,'filled')

m.plot(qn);

hold on;

scatter3(fXData,fYData,fZData,15,dexMap,'filled')

scatter3(fXData,fYData,fZData,15,dexMap,'filled')

D2

scatter3(fXData,fYData,fZData,5,delP,'filled')

for k=2:sizeZ-1

for j=2:sizeY-1

for i=2:sizeX-1

xData(ct)=H{i,j,k}(1);

yData(ct)=H{i,j,k}(2);

zData(ct)=H{i,j,k}(3);

binMap(ct)=P(i,j,k);

binBound(ct)=delP(i,j,k);

dexMap(ct)=D(i,j,k);

ct=ct+1;

end

end

end

fXData=zeros(size(xData));

fYData=zeros(size(xData));

fZData=zeros(size(xData));

[~,lBin]=size(binMap);

for i=1:lBin

if binMap(i)==1

fXData(i)=xData(i);

fYData(i)=yData(i);

fZData(i)=zData(i);

end

end

ct2=1;

[~,lF]=size(fXData);

while ct2<=lF

if all([fXData(ct2)==0;fYData(ct2)==0;fZData(ct2)==0])

fXData(ct2)=[];

fYData(ct2)=[];

fZData(ct2)=[];

dexMap(ct2)=[];

binMap(ct2)=[];

binBound(ct)=[];

else

ct2=ct2+1;

end

[~,lF]=size(fXData);

end

figure

scatter3(fXData,fYData,fZData,20,dexMap,'filled')

resDel{1,num}=delP;

resD{1,num}=P;

resH{1,num}=H;

for i=1:sizeZ

area(i)=sum(sum(P(:,:,i))\*deltaX)\*deltaY;

end

volume=sum(area)\*deltaZ;

figure

m.plot(qn);

hold on;

scatter3(fXData,fYData,fZData,5,dexMap,'filled')

t

D2

clear all

D2

figure

scatter3(fXData,fYData,fZData,5,binMap,'filled')

scatter3(fXData,fYData,fZData,5,binBound,'filled')

scatter3(fXData,fYData,fZData,50,binBound,'filled')

P==delP

for k=2:sizeZ-1

for j=2:sizeY-1

for i=2:sizeX-1

if and(sum(sum(sum(P(i-1:i+1, j-1:j+1, k-1:k+1))))<27, P(i,j,k)==1)

delP(i,j,k)=1;

end

%{

if and(sum(sum(sum(P(i-1:i+1, j-1:j+1, k-1:k+1))))==27, P(i,j,k)==1)

delP(i,j,k)=0;

end

if P(i,j,k)==0

delP(i,j,k)=0;

end

%}

end

end

end

P==delP

P(i-1:i+1, j-1:j+1, k-1:k+1))))<27

sum(sum(sum(P(i-1:i+1, j-1:j+1, k-1:k+1))))<27

sum(sum(sum(P(i-1:i+1, j-1:j+1, k-1:k+1))))

P(i,j,k)==1

and(sum(sum(sum(P(i-1:i+1, j-1:j+1, k-1:k+1))))<27, P(i,j,k)==1)

and(sum(sum(sum(P(4:6, 4:6, 7:9))))<27, P(i,j,k)==1)

sum(sum(sum(P(4:6, 4:6, 7:9))))

delP(5,5,8)

P(4:6,4:6,5:7)

sum(P(4:6,4:6,6:8))

and(sum(sum(sum(P(4:6,4:6,6:8))))<27, P(i,j,k)==1)

and(sum(sum(sum(P(4:6,4:6,5:7))))<27, P(i,j,k)==1)

for k=2:sizeZ-1

for j=2:sizeY-1

for i=2:sizeX-1

if and(sum(sum(sum(P(i-1:i+1, j-1:j+1, k-1:k+1))))<27, P(i,j,k)==1)

delP(i,j,k)=1;

delP(i,j,k)

P(i,j,k)

i

j

k

end

%{

if and(sum(sum(sum(P(i-1:i+1, j-1:j+1, k-1:k+1))))==27, P(i,j,k)==1)

delP(i,j,k)=0;

end

if P(i,j,k)==0

delP(i,j,k)=0;

end

%}

end

end

end

P(5:7,5:7,7:9)

D2

figure

scatter3(fXData,fYData,fZData,5,dexMap,'filled')

figure

scatter3(fXData,fYData,fZData,5,binBound,'filled')

scatter3(fXData,fYData,fZData,5,binMap,'filled')

figure

scatter3(fXData,fYData,fZData,5,binBound,'filled')

scatter3(fXData,fYData,fZData,5,dexMap,'filled')

resH{1,1}

resH{1,2}

cell{1,10}

cell(1,10)

ans{1,3}

D2

mdl\_puma560

p560.ikine(2)

t

%-- 11/25/2017 3:22 PM --%

mdl\_puma560

p560.ikine(2)

p560.ikine(transl(1,1,1),'tol',1)

p560.plot(ans)

p560.fkine(p560.ikine(transl(1,1,1),'tol',1)

)

p560.fkine(p560.ikine(transl(1,1,1),'tol',1))

pdist([0.2385, 0.6413,0.5245;1,1,1],'euclidean')

D3

1:3

Nadlab4

clear all

D3

H{1,1,1}

xData=zeros(1,sizeX\*sizeY\*sizeZ);

yData=zeros(size(xData));

zData=zeros(size(xData));

binMap=zeros(size(xData));

binBound=zeros(size(xData));

dexMap=zeros(size(xData));

ct=1;

for k=2:sizeZ-1

for j=2:sizeY-1

for i=2:sizeX-1

xData(ct)=H{i,j,k}(1);

yData(ct)=H{i,j,k}(2);

zData(ct)=H{i,j,k}(3);

binMap(ct)=P(i,j,k);

binBound(ct)=delP(i,j,k);

dexMap(ct)=D(i,j,k);

ct=ct+1;

end

end

end

fXData=zeros(size(xData));

fYData=zeros(size(xData));

fZData=zeros(size(xData));

[~,lBin]=size(binMap);

for i=1:lBin

if binMap(i)==1

fXData(i)=xData(i);

fYData(i)=yData(i);

fZData(i)=zData(i);

end

end

scatter3(fXData,fYData,fZData,50,'filled')

H{1,1,1}(1)

D3

Hcen{1,1,1}

Hcen{1,1,2}

Hcen{1,2,1}

D3

scatter3(xData,yData,zData,50,)

scatter3(xData,yData,zData,50,'filled')

D2

D3

scatter3(xData,yData,zData,50,'filled')

D3

scatter3(xData,yData,zData,50,'filled')

scatter3(xData,yData,zData,50,'c','filled')

scatter3(xCen,yCen,zCen,50,'c','filled')

clear all

D3

scatter3(xData,yData,zData,50,'c','filled')

hold on

scatter3(xCen,yCen,zCen,50,'filled')

Hcen(1)

Hcen{1,1,1}

Hcen{1,2,1}

Hcen{2,1,1}

Hcen{2,1,2}

Hcen{2,2,2}

Hcen{1,2,2}

D3

scatter3(xData,yData,zData,50,'c','filled')

hold on

scatter3(xCen,yCen,zCen,50,'filled')

D3

(sizeX-1)\*(sizeY-1)\*(sizeZ-1)

clearall

clear all

D3

xCen=zeros(1,(sizeX-1)\*(sizeY-1)\*(sizeZ-1));

i=1:sizeX-1

D3

scatter3(xData,yData,zData,50,'c','filled')

hold on

scatter3(xCen,yCen,zCen,50,'filled')

D3

scatter3(xData,yData,zData,50,'c','filled')

scatter3(xData,yData,zData,5,'c','filled')

hold on

scatter3(xCen,yCen,zCen,5,'filled')

m.ikine(transl(3,3,3))

m.ikine(transl(3,3,3))==[]

isempty(m.ikine(transl(3,3,3)))

sqrt(3)

m.fkine([0 0 0 0 0 0])

m.fkine([0 0 0 0 0 0]).t

m.fkine(q0).t(1)

m.fkine([0 0 0 0 0 0]).t(1)

D3

D2

D3

D2

sqrt(deltaX^2+deltaY^2+deltaZ^2)

D2

D3

D2

D3

D2

D3

D2

D3

D2

sqrt(deltaX^2+deltaY^2+deltaZ^2)/2

D3

D2

D3

D2

P1=P

D3

pi\*rand(1,6)

D3

while isempty(q0)

temp=pi\*rand(1,6);

ptX=m.fkine(temp).t(1);

ptY=m.fkine(temp).t(2);

ptZ=m.fkine(temp).t(3);

if all([ptX>xmin ptX<xmax ...

ptY>ymin ptY<ymax ...

ptZ>zmin ptZ<zmax])

q0=temp;

end

end

clear q0

while isempty(q0)

temp=pi\*rand(1,6);

ptX=m.fkine(temp).t(1);

ptY=m.fkine(temp).t(2);

ptZ=m.fkine(temp).t(3);

if all([ptX>xmin ptX<xmax ...

ptY>ymin ptY<ymax ...

ptZ>zmin ptZ<zmax])

q0=temp;

end

end

q0=[];

while isempty(q0)

temp=pi\*rand(1,6);

ptX=m.fkine(temp).t(1);

ptY=m.fkine(temp).t(2);

ptZ=m.fkine(temp).t(3);

if all([ptX>xmin ptX<xmax ...

ptY>ymin ptY<ymax ...

ptZ>zmin ptZ<zmax])

q0=temp;

end

end

D3

clear all

D3

D2

D3

clear all

D3

D2

D3

D2

D3

%-- 11/28/2017 6:12 PM --%

sqrt(3+2\*sqrt(2))

mdl\_stanford

stanf.plot(qz)

stanf.jacobe

stanf.jacobe(qz)

%-- 11/29/2017 1:29 PM --%

D2

Untitled

Minesweeper

clear all

Minesweeper

mine[9,9]

mine(9,9）

mine(9,9)

Minesweeper

{"\*","\*";"\*","\*"}

cell(9,9)

Minesweeper

mdl\_faunc10l

mdl\_fanuc10L

R.plot(q0)

qz=[0 0 0 0 0 0]

R.plot(qz)

dq=1e-7

Tp1=p560.fkine(qn+[dq 0 0 0 0 0])

Tp1=p560.fkine(qz+[dq 0 0 0 0 0])

Tp1=R.fkine(qz+[dq 0 0 0 0 0])

Tp2=R.fkine(qz+[0 dq 0 0 0 0])

dq=1e-6

Tp1=R.fkine(qz+[dq 0 0 0 0 0])

Tp2=R.fkine(qz+[0 dq 0 0 0 0])

Tp3=R.fkine(qz+[0 0 dq 0 0 0])

Tp4=R.fkine(qz+[0 0 0 qz 0 0])

Tp4=R.fkine(qz+[0 0 0 qz 0 0 ])

Tp4=R.fkine(qz+[0 0 0 qz 0 0 ])

Tp4=R.fkine(qz+[0 0 0 qz 0 0])

Tp4=R.fkine(qz+[0 0 0 dq 0 0])

Tp5=R.fkine(qz+[0 0 0 0 dq 0])

Tp6=R.fkine(qz+[0 0 0 0 0 dq])

T0=R.fkine(qz)

dq=1e-5

Tp1=R.fkine(qz+[dq 0 0 0 0 0])

Tp2=R.fkine(qz+[0 dq 0 0 0 0])

Tp3=R.fkine(qz+[0 0 dq 0 0 0])

Tp4=R.fkine(qz+[0 0 0 dq 0 0])

Tp5=R.fkine(qz+[0 0 0 0 dq 0])

Tp6=R.fkine(qz+[0 0 0 0 0 dq])

T0=R.fkine(qz)

dTdq1=(Tp1-T)/dq

dTdq1=(Tp1-T0)/dq

dTdq2=(Tp2-T0)/dq

dTdq3=(Tp3-T0)/dq

dTdq4=(Tp4-T0)/dq

dTdq5=(Tp5-T0)/dq

dTdq6=(Tp6-T0)/dq

Tp11=R.fkine(q0+[dq 0 0 0 0 0])

dTdq1=(Tp11-T0)/dq

dTdq1=(Tp1-T0)/dq

Tp1

Tp11

Tp1=R.fkine(qz+[dq 0 0 0 0 0])

T0=R.fkine(q0)

Tz=R.fkine(qz)

dTdq1=(Tp11-T0)/dq

dTzdq1=(Tp1-Tz)/dq

dq=1e-7

Tp1=R.fkine(qz+[dq 0 0 0 0 0])

Tp11

dTdq1=(Tp11-T0)/dq

dTzdq1=(Tp11-T0)/dq

clear all

ManiJacob

Tp

ManiJacob

Tp(i)

Tp(i)-TP

(Tp(i)-TP)/dq

ManiJacob

round(dTdq,3)

round(dTdq,2)

ManiJacob

Tp0

R.jacob0(1)

TP

R.plot

R.teach()

ManiJacob

clear

ManiJacob

R.jacob0(qz)

R.jacob0(qz,'trans')

dR=dTdq(1:3,1:3)

dR=dTdq(1:3,1:3,1)

ManiJacob

vex(dR\* TP(1:3,1:3)')

vex(dR\*TP(1:3,1:3)')

h=dR\*TP(1:3,1:3)'

TP.tr(1:3,1:3)

TP.r

vex(dR\*TP.R')

%-- 12/3/2017 5:00 PM --%

a=1:10000

b=a^3

b=a.^3

b1=(b-1)^3

b1=(b-1).^3

plot(a,b)

hold on

plot(a,b1)

b-b1

hold on

figure

plot(a,(b-b1)/b)

sym n

(n-1)^3

evaluate((n-1)^3)

expand((n-1)^3)

syms n

expand((n-1)^3)

det([1 2; 0 3])

det([1 2;3 0])

Sth

[3;4][1 -1;0 0]

[3;4]\*[1 -1;0 0]

[3;4]\*[1,1;0,0]

[3,4]\*[1,1;0,0]

[1,1;0,0]\*[3;4}

[1,1;0,0]\*[3;4]

[1,-11;0,0]\*[3;4]

[1,-1;0,0]\*[3;4]

rank([1,-1;0,0])

mdl\_puma560

p560.ikine6s(10

p560.ikine6s(10)

p560.ikine(1)

D2

size(P)

clear all

D2

%-- 12/6/2017 1:00 PM --%

D2

m

m.plot([pi/4 pi/4 pi/4 pi/4 pi/4 pi/4]);

D2

6DOFR3

DOF6R3

clear all

DOF6R3

DOF6R3

DOF6R3

(1:sizeZ)\*(1:sizeY)'

1:sizeZ

[1:sizeZ]\*[1:sizeY]'

[1:sizeZ]\*([1:sizeY]')

size(P）

size(P)

a1=1:9

a2=1:9

a2=a2'

H{[1 2 3]}

DOF6R3

sum(size(H))

DOF6R3

all(logic)

DOF6R3

clear all

DOF6R3

dd

TimeComplexity

3\*2\*2\*3

TimeComplexity

3\*3\*2\*3

TimeComplexity

3\*3\*3\*3

TimeComplexity

5\*3\*3\*3

TimeComplexity

5\*5\*3\*3

TimeComplexity

5\*5\*5\*3

TimeComplexity

9\*5\*5\*3

TimeComplexity

81\*5\*3

TimeComplexity

TimeComplexity

9\*9\*9\*3

TimeComplexity

11\*81\*3

TimeComplexity

11\*99\*3

TimeComplexity

11^3\*3

bigOAnalysis

TimeComplexity

5^3\*3

TimeComplexity

bigOAnalysis

TimeComplexity

bigOAnalysis

%-- 12/6/2017 6:13 PM --%

size(-1:2:1)

3+2+2

3+3+2

-1:.15:1

-1:.5:1

size(-1:.25:1)

size(-1:.2:1)

bigOAnalysis

cftool

bigOAnalysis

TimeComplexity

size(-1:.1:1)

bigOAnalysis

TimeComplexity

size(-1:.2:1)

42+11

bigOAnalysis

bigOAnalysis

t=datetime("now")

horzcat("1",datetime("now"))

t=datetime("now")

t=datestr(datetime("now"))

t=datestr(datetime("now"),'mm/dd/yy')

DataGeneration6DOFR3

load('6DOFR3.12.06.17.20.44.mat')

DataGeneration6DOFR3

resM(1:18)

FurtherProcessing

resM(i+1)-resM(i)

(resM(i+1)-resM(i))~=dif

(resM(24)-resM(23))~=dif

zeros(1,2)

DataGeneration6DOFR3

FurtherProcessing

(resM(22)-resM(21))~=dif

FurtherProcessing

%-- 12/7/2017 8:28 AM --%

load('6DOFR3.n1.12.06.17.21.03.mat')

FurtherProcessing

stopPt(1)+1

FurtherProcessing

DataGeneration6DOFR3

load('6DOFR3.n1.12.07.17.13.41.mat')

FurtherProcessing

resB(450)

resB(451)

resB(452)

FurtherProcessing

mdl\_puma560

p560.ikine6s(transl(0.4,0.4,0.4))

H{i,j,k}

H{i,j,k}(1)

DataGeneration6DOFSO3

sum(resB)

DataGeneration6DOFSO3

sum(resB)

H(:,:,1)

H(1,1,1)

DataGeneration6DOFSO3

sum(resB)

DataGeneration6DOFSO3

p560.ikine6s(transl(1,0.4,0.4))

mdl\_puma560

p560.ikine6s(transl(1,0.4,0.4))

p560.ikine6s(transl(。8,0.4,0.4))

p560.ikine6s(transl(.8,0.4,0.4))

p560.ikine6s(transl(.6,0.4,0.4))

DataGeneration6DOFSO3

p560.ikine6s(transl(.6,0.5,0.4))

mdl\_puma560

p560.ikine6s(transl(.6,0.5,0.4))

p560.ikine6s(transl(.6,0.45,0.4))

p560.ikine6s(transl(.6,0.46,0.4))

p560.ikine6s(transl(.6,0.47,0.4))

p560.ikine6s(transl(.6,0.48,0.4))

p560.ikine6s(transl(.6,0.49,0.4))

p560.ikine6s(transl(.6,0.5,0.4))

DataGeneration6DOFSO3

Decoder6DOFR3

scatter3(fXData,fYData,fZData,5,binMap,'filled')

clear all

load('6DOFR3.n1.12.07.17.14.40.mat')

Decoder6DOFR3

load('6DOFR3.n1.12.07.17.14.33.mat')

Decoder6DOFR3

clear all

load('6DOFR3.n1.12.07.17.14.33.mat')

Decoder6DOFR3

scatter3(fXData,fYData,fZData,5,binBound,'filled')

figure

scatter3(fXData,fYData,fZData,5,binMap,'filled')

DataGeneration6DOFSO3

load('6DOFSO3.n1.12.07.17.14.58.mat')

clear all

load('6DOFSO3.n1.12.07.17.14.58.mat')

Decoder6DOFSO3

axis([-pi pi -pi pi -pi pi])

axis([-1.2pi 1.2pi -1.2pi 1.2pi -1.2pi 1.2pi])

axis([-1.2\*pi 1.2\*pi -1.2\*pi 1.2\*pi -1.2\*pi 1.2\*pi])

DataGeneration6DOFR3

%-- 12/7/2017 5:34 PM --%

DataGeneration6DOFR3

Decoder6DOFR3

load('6DOFR3.n1000.L1331.12.07.17.18.32.mat')

Decoder6DOFR3

load('6DOFR3.n1000.L1331.12.07.17.18.32.mat')

Decoder6DOFR3

sum(sum(resB))

m.plot([pi/4 pi/4 pi/4 pi/4 pi/4 pi/4]);

load('6DOFR3.n1000.L1331.12.07.17.18.32.mat')

sum(sum(resB(1,:))

sum(sum(resB(1,:)))

DataGeneration6DOFR3

Decoder6DOFR3

DataGeneration6DOFR3

load('6DOFR3.n100.L1331.12.07.17.19.25.mat')

resM(4,:)

size(resB(3,:)

size(resB(3,:))

size(resM(3,:))

DataGeneration6DOFR3

Decoder6DOFR3

DataGeneration6DOFR3

Decoder6DOFR3

DataGeneration6DOFR3

binaryMap6DOFR3

Decoder6DOFR3

LabG8

DataGeneration6DOFR3

%-- 12/8/2017 11:57 PM --%

DataGeneration6DOFR3

nnstart

DataGeneration6DOFR3

Decoder6DOFR3

resB=(floor(NeuralNet1291(resM)))

Decoder6DOFR3

resB=((NeuralNet1291(resM)))

Decoder6DOFR3

load('6DOFR3.n1000.L9261.12.09.17.00.49.mat')

clear all

load('6DOFR3.n1000.L9261.12.09.17.00.49.mat')

TrainTest

genFunction(net,'MatrixOnly','yes')

genFunction(net)

tr

bodyfatOutputs = net(bodyfatInputs);

trOut = bodyfatOutputs(tr.trainInd);

vOut = bodyfatOutputs(tr.valInd);

tsOut = bodyfatOutputs(tr.testInd);

trTarg = bodyfatTargets(tr.trainInd);

vTarg = bodyfatTargets(tr.valInd);

tsTarg = bodyfatTargets(tr.testInd);

plotregression(trTarg, trOut, 'Train', vTarg, vOut, 'Validation', tsTarg, tsOut, 'Testing')

load('6DOFR3.n1.L9261.12.09.17.10.08.mat')

resB1=neural\_function(resM)

resB1=neural\_function(resM')

resB1=resB1'

for i=1:resB1

if(resB1(i)!=0)

for i=1:resB1

if(resB1(i)~=0)

resB1(i)=1

end

edn

end

for i=1:resB1

if(resB1(i)~=0)

resB1(i)=1

end

end

DataGeneration6DOFSO3

clear all

[resB1,~,~]=neural\_function(resM')

load('6DOFR3.n1.L9261.12.09.17.10.08.mat')

[resB1,~,~]=neural\_function(resM')

resB=resB'

resBf=floor(resB1)

sum(sum(resBf==resB))

Untitled3

clear all

load('6DOFR3.n1.L9261.12.09.17.10.08.mat')

[resB1,~,~]=neural\_function(resM')

resB1=resB1'

resB1(3)

Untitled3

sum(sum(resB2==resB))

Decoder6DOFR3

Untitled3

sum(resB2)

Untitled3

sum(resB2)

Decoder6DOFR3

[resB1,~,~]=neural\_function(resM')

Decoder6DOFR3

resB1=resB1'

Decoder6DOFR3

[resB1,~,~]=neural\_function(resM')

Decoder6DOFR3

resB1=resB1'

Decoder6DOFR3

Decoder6DOFR3

Decoder6DOFR3

Decoder6DOFR3

%-- 12/9/2017 1:21 PM --%

load('6DOFR3.n1.L9261.12.09.17.10.08.mat')

[resB1,~,~]=neural\_function(resM')

resB1=resB1'

Decoder6DOFR3

ManipltyTest

binaryMap6DOFR3

ManipltyTest

Decoder6DOFR3

load('6DOFR3.n1000.L9261.12.09.17.00.49.mat')

TrainTest

gpu1=gpuDevice(1)

TrainTest

load('C:\Users\Alexander Liao\Google Drive\Guild Paper\NNIBMtrain\6DOFR3\12917\Net.mat')

net

TrainTest

net=train(net,resM',resB','useGPU','yes','showResources','yes');

net.input.processFcns={'mapminmax'};

net.output.processFcns={'mapminmax'};

net=train(net,resM',resB','useGPU','yes','showResources','yes');

TrainTest

net.trainParam.epochs=20000;

net=train(net,resM',resB','useParallel','yes');

clear all

sl\_quadcopter

DataGeneration6DOFR3

%-- 12/9/2017 11:26 PM --%

load('6DOFR3.N10000.E1.L9261.12.09.2017.10.54.mat')

TrainTest

nnstart

net=[];

TrainTest

clear all

load('6DOFR3.N10000.E1.L9261.12.09.2017.10.54.mat')

%-- 12/9/2017 11:39 PM --%

load('6DOFR3.N10000.E1.L9261.12.09.2017.10.54.mat')

TrainTest

genFunction(net)

%-- 12/10/2017 10:05 AM --%

DataGeneration6DOFR3

DataGeneration6DOFR3

DataGeneration6DOFR3

resB1=net1000(resM)

resB1=net1000(resM')

resB1=int8(resB1)

Decoder6DOFR3

Decoder6DOFR3

resB1=resB1'

Decoder6DOFR3

sum(sum(resB==resB1))

resB1=net1000(resM')

resB1=int8(resB1)

resB1=resB1'

sum(sum(resB==resB1))

load('6DOFR3.n1000.L9261.12.09.17.00.49.mat')

resB1=net1000(resM')

resB1=int8(resB1)

resB1=resB1';

sum(sum(resB==resB1))

resB==resB1

for i=1:1000

g(i)=sum(resB(i,:)==resB1(i,:))/9261;

end

resB(1,:)==resB1(1,:)

sum(ans)

scatter(1:1000,g)

%-- 12/10/2017 1:44 PM --%

syms x

rsums(x(x-20)(x-25)/600)

rsums(x\*(x-20)\*(x-25)/600)

rsums(x\*(x-20)\*(x-25)/600,[0,20])

rsums(x\*(x-20)\*(x-25)/500,[0,20])

5\*(5-20)\*(5-25)/500

NadLab5

plot(x,y1)

NadLab5

xlabel("cm")

NadLab5

grid on

NadLab5

num2str(fx(1))

NadLab5

openExample('graphics/AddTextArrowToGraphExample')

NadLab5

num2str(fx)

NadLab5

b(3)

NadLab5

fx=fx\*5

fx=fx/2

NadLab5

fx=fx\*2

%-- 12/10/2017 3:42 PM --%

NadLab5

(pi/2)\*(fx.\*0.5)^2\*0.5

(pi/2)\*(fx.\*0.5).^2\*0.5

round(ans,3)

round(ans,2)

(pi/2)\*(fx.\*0.5).^2\*0.5

round(ans,2)

(pi/2)\*(fx.\*0.5).^2\*0.5

round(ans,3)

sum(ans)

%-- 12/14/2017 6:44 PM --%

D

DOF5

m.teach()

DOF5

m.ikine(3)

DataGeneration5DOFR3

Decoder6DOFR3

DataGeneration5DOFR3

Decoder6DOFR3

binaryMap5DOFR3

DataGeneration5DOFR3

Decoder6DOFR3

DataGeneration5DOFR3

Decoder6DOFR3

DataGeneration5DOFR3

Decoder6DOFR3

DataGeneration5DOFR3

%-- 12/16/2017 12:32 AM --%

DataGeneration5DOFR3

%-- 12/16/2017 4:08 PM --%

nnstart

mdl\_puma560

p560.ikine(1)

SE3.check(1

SE3.check(1)

SE3.check(transl(1,1,1))

1:ans

tr2delta(1)

tr2delta(transl(0,0,1),transl(0,1,1))

norm(1)

tr2delta(1)

jacobe(p560,qz\_

jacobe(p560,qz\_)

jacobe(p560,qz)

a=ans

b=a\*a'

c=a\*[1,1,1,1,1,1]'\*a'

c=a\*[1,1,1,1,1,1]\*a'

c=a\*([1,1,1,1,1,1]')\*a'

c=a\*diag([1,1,1,1,1,1])\*a'

c==b

D3

load('C:\Users\Alexander Liao\Google Drive\Guild Paper\1217\1.mat')

profiler

profile

D3

D2

D3

figure

m.plot([pi/4 pi/4 pi/4 pi/4 pi/4 pi/4]);

hold on;

scatter3(fXData,fYData,fZData,20,dexMap,'filled')

figure

scatter3(fXData,fYData,fZData,20,binBound,'filled')

figure

scatter3(fXData,fYData,fZData,20,binMap,'filled')

for k=1:sizeZ-1

for j=1:sizeY-1

for i=1:sizeX-1

xCen(ct2)=Hcen{i,j,k}(1);

yCen(ct2)=Hcen{i,j,k}(2);

zCen(ct2)=Hcen{i,j,k}(3);

bCen(ct2)=Pcen(i,j,k);

ct2=ct2+1;

end

end

end

scatter3(xCen,yCen,zCen)

scatter3(xCen,yCen,zCen,bCen)

scatter3(xCen,yCen,zCen,50,bCen)

sum(bCen)

h34

r= (4/3)\*pi\*(tolerance)^3

scatter3(xCen,yCen,zCen,50,bCen)

scatter3(fXData,fYData,fZData,50,bCen,'filled')

m.plot([pi/4 pi/4 pi/4 pi/4 pi/4 pi/4])

hold on

scatter3(fXData,fYData,fZData,20,bCen,'filled')

m.plot([pi/4 pi/4 pi/4 pi/4 pi/4 pi/4])

hold on

scatter3(fXData,fYData,fZData,5,bCen,'filled')

m.plot([pi/4 pi/4 pi/4 pi/4 pi/4 pi/4])

hold on

scatter3(fXData,fYData,fZData,5,bCen,'filled')

m.plot([pi/4 pi/4 pi/4 pi/4 pi/4 pi/4])

hold on

scatter3(fXData,fYData,fZData,15,bCen,'filled')

scatter3(fXData,fYData,fZData,15,''b,'filled')

m.plot([pi/4 pi/4 pi/4 pi/4 pi/4 pi/4])

hold on

scatter3(fXData,fYData,fZData,15,'b','filled')

m.plot([pi/4 pi/4 pi/4 pi/4 pi/4 pi/4])

hold on

scatter3(fXData,fYData,fZData,7.5,'c','filled')

m.plot([pi/4 pi/4 pi/4 pi/4 pi/4 pi/4])

hold on

scatter3(fXData,fYData,fZData,7.5,'c','filled')

m.plot([pi/4 pi/4 pi/4 pi/4 pi/4 pi/4])

hold on

scatter3(fXData,fYData,fZData,7.5,'b','filled')

m.plot([pi/4 pi/4 pi/4 pi/4 pi/4 pi/4])

hold on

scatter3(fXData,fYData,fZData,6.5,'k','filled')

m.plot([pi/4 pi/4 pi/4 pi/4 pi/4 pi/4])

hold on

scatter3(fXData,fYData,fZData,7.5,'k','filled')

sum(bCen)

sum(bCen)\*(4/3)\*(tolerance^3\_

sum(bCen)\*(4/3)\*(tolerance^3)

(4/3)\*(tolerance^3)

sum(bCen)\*(4/3)\*(tolerance^3)\*pi

3000\*4/3\*tolerance^3

load('C:\Users\Alexander Liao\Google Drive\Guild Paper\1217\final.mat')

clear all

load('C:\Users\Alexander Liao\Google Drive\Guild Paper\1217\final.mat')

for k=1:sizeZ-1

for j=1:sizeY-1

for i=1:sizeX-1

xCen(ct2)=Hcen{i,j,k}(1);

yCen(ct2)=Hcen{i,j,k}(2);

zCen(ct2)=Hcen{i,j,k}(3);

bCen(ct2)=Pcen(i,j,k);

ct2=ct2+1;

end

end

end

sum(Pcen)

sum(sum(Pcen))

sum(sum(sum(Pcen)))

4\*pi\*tolerance^3/3

Hcen(8,8,8)

Hcen(8,8,8)(3)

(Hcen(8,8,8))(3)

(Hcen(8,8,8))\*(3)

zee=(Pcen(:,:,8)

zee=(Pcen(:,:,8))

dee=Hcen(:,:,8)

Hcen=Hcen{:,:,8}

load('C:\Users\Alexander Liao\Google Drive\Guild Paper\1217\final.mat')

Hcen=Hcen(:,:,8)

Pcen=Pcen(:,:,8)

for k=1

for j=1:sizeY-1

for i=1:sizeX-1

xCen(ct2)=Hcen{i,j,k}(1);

yCen(ct2)=Hcen{i,j,k}(2);

zCen(ct2)=Hcen{i,j,k}(3);

bCen(ct2)=Pcen(i,j,k);

ct2=ct2+1;

end

end

end

h34

xCen=[]

yCen=[]

zCen=[]

bCen=[]

for k=1

for j=1:sizeY-1

for i=1:sizeX-1

xCen(ct2)=Hcen{i,j,k}(1);

yCen(ct2)=Hcen{i,j,k}(2);

zCen(ct2)=Hcen{i,j,k}(3);

bCen(ct2)=Pcen(i,j,k);

ct2=ct2+1;

end

end

end

h34

scatter3(fXData,fYData,fZData,50,'k','filled')

scatter2(fXData,fYData,50,'k','filled')

scatter(fXData,fYData,50,'k','filled')

load('C:\Users\Alexander Liao\Google Drive\Guild Paper\1217\final.mat')

Hcen(:,:,2)

Hcen(2,2,2)

Hcen(2,2,4)

Hcen(2,2,8)

Hcen(2,2,4)

Hcen(2,2,15)

Hcen=Hcen(:,8,:)

Hcen=Hcen(:,8,:)'

load('C:\Users\Alexander Liao\Google Drive\Guild Paper\1217\final.mat')

Hcen=Hcen(:,8,:)

for j=1:16

Hcee(:,i)=Hcen(:,i)

end

for j=1:16

Hcee(:,j)=Hcen(:,j)

end

Pcen=Pcen(:,8,:)

for j=1:16

Bcee(:,j)=Bcen(:,j)

end

Bcee(:,j)=bCen(:,j)

for j=1:16

Bcee(:,j)=Bcen(:,j)

end

for j=1:16

Bcee(:,j)=Bcen(:,j)

end

for j=1:16

Bcee(:,j)=bCen(:,j)

end

for j=1:16

load('C:\Users\Alexander Liao\Google Drive\Guild Paper\1217\final.mat')

Hcen=Hcen(:,:,4)

Pcen=Pcen(:,:,4)

xCen=[]

yCen(ct2)=Hcen{i,j,k}(2);

yCen=[]

zCen=[]

bCen=[]

for k=1:sizeZ-1

for j=1:sizeY-1

for i=1:sizeX-1

xCen(ct2)=Hcen{i,j,k}(1);

yCen(ct2)=Hcen{i,j,k}(2);

zCen(ct2)=Hcen{i,j,k}(3);

bCen(ct2)=Pcen(i,j,k);

ct2=ct2+1;

end

end

end

end

yCen=[]

zCen=[]

xCen=[]

for k=1:sizeZ-1

for j=1:sizeY-1

for i=1:sizeX-1

xCen(ct2)=Hcen{i,j,k}(1);

yCen(ct2)=Hcen{i,j,k}(2);

zCen(ct2)=Hcen{i,j,k}(3);

bCen(ct2)=Pcen(i,j,k);

ct2=ct2+1;

end

end

end

for k=1

for j=1:sizeY-1

for i=1:sizeX-1

xCen(ct2)=Hcen{i,j,k}(1);

yCen(ct2)=Hcen{i,j,k}(2);

zCen(ct2)=Hcen{i,j,k}(3);

bCen(ct2)=Pcen(i,j,k);

ct2=ct2+1;

end

end

end

h34

Hcen=Hcen(:,:,15)

load('C:\Users\Alexander Liao\Google Drive\Guild Paper\1217\final.mat')

Hcen=Hcen(:,:,15)

Pcen=Pcen(:,:,15)

yCen=[]

zCen=[]

xCen=[]

for k=1

for j=1:sizeY-1

for i=1:sizeX-1

xCen(ct2)=Hcen{i,j,k}(1);

yCen(ct2)=Hcen{i,j,k}(2);

zCen(ct2)=Hcen{i,j,k}(3);

bCen(ct2)=Pcen(i,j,k);

ct2=ct2+1;

end

end

end

h34

3000\*4/3\*tolerance^3\*pi

D2

clear all

D2

D3

D2

length([zmin:deltaZ:zmax,ymin:deltaY:ymax,xmin:deltaX:xmax])

D2

length([zmin:deltaZ:zmax,ymin:deltaY:ymax,xmin:deltaX:xmax])

D2

length([zmin:deltaZ:zmax,ymin:deltaY:ymax,xmin:deltaX:xmax])

D2

length([zmin:deltaZ:zmax,ymin:deltaY:ymax,xmin:deltaX:xmax])

D2

length([zmin:deltaZ:zmax,ymin:deltaY:ymax,xmin:deltaX:xmax])

D2

length([zmin:deltaZ:zmax,ymin:deltaY:ymax,xmin:deltaX:xmax])

D2

length([zmin:deltaZ:zmax,ymin:deltaY:ymax,xmin:deltaX:xmax])

classical

plot(1:6,a)

plot(x2(1:6),a)

D3

classical

plot(x2(1:6),a)

D3

.8 .4 .3 .2 .15 .1 .08

D3

classical

plot(x11(1:3),a1)

D3

classical

plot(x11(1:4),a1)

hold on

plot(x11(1:4),a1)

hold on

plot(x2(1:6),a)

classical

plot(x11(1:4),a1)

hold on

plot(x2(1:6),a)

plot(x2(1:4),a1)

hold on

plot(x2(1:6),a)

plot(x2(1:4),a1)

hold on

plot(x2(1:6),a)

legend('classical','CI')

legend('CI','Classical')

scatter(x2,x1)

scatter(x2,x1,'filled')

scatter(x2(1:5),x1(1:5),'filled')

hold on

scatter(x2(1:6),x1(1:6),'filled')

hold on

scatter(x2(1:4,6),x11(1:5),'filled')

scatter([x2(1:4),x2(6)],x11(1:5),'filled')

scatter(x2(1:6),x1(1:6),'filled')

hold on

scatter([x2(1:4),x2(6)],x11(1:5),'filled')

grid on

legend('CI','Classical')

legend('Classical','CI')

scatter(x2(1:6),x1(1:6),'filled')

grid on

scatter([x2(1:4),x2(6)],x11(1:5),'filled','d')

grid on

hold on

scatter(x2(1:6),x1(1:6),'filled')

legend('Classical','CI')

legend('CI','Classical')

figure

scatter(x2(1:6),x1(1:6),10'filled')

scatter(x2(1:6),x1(1:6),10,'filled')

scatter(x2(1:6),x1(1:6),50,'filled')

scatter(x2(1:6),x1(1:6),60,'filled')

scatter(x2(1:6),x1(1:6),90,'filled')

grid on

hold on

scatter([x2(1:4),x2(6)],x11(1:5),90,'filled','d')

legend('CI','Classical')

legend('Classical','CI')

%-- 12/19/2017 6:27 AM --%

and\_linearlayer

%-- 12/21/2017 2:58 AM --%

p=1:100000

x=2

y=1

norm=(x^p+y^p)^(1/p)

norm=(x.^p+y.^p).^(1/p);

norm=(x.^p+y.^p).^(p.^-1);

x=10

norm=(x.^p+y.^p).^(p.^-1);

plot(p,norm)

%-- 12/22/2017 10:02 AM --%

nnstart

DataGeneration6DOFR3

resB1=ah(resM')

resB1=ah(resM)

clear all

DataGeneration6DOFR3

resB1=ah(resM)

net=fitnet([25 50 50 125 125],'trainscg')

net=train(net,resM',resB');

net=fitnet([27 27 27],'trainscg')

net=train(net,resM',resB');

net=fitnet([27 27 27],'traingd')

net=train(net,resM',resB');

net.trainParam.epochs=20000;

net=train(net,resM',resB');

DataGeneration6DOFR3

net=fitnet([27 27 27],'traingd')

net.trainParam.epochs=20000;

net=train(net,resM',resB');

clear all

load('6DOFR3.n30000.L27.12.22.17.23.20.mat')

net=fitnet([27 27 27],'traingd')

net.trainParam.epochs=20000;

clear all

load('6DOFR3.n30000.L27.12.22.17.23.20.mat')

net=fitnet([27 27 27],'traingd')

net.trainParam.epochs=20000;

net=train(net,resM',resB');

net=fitnet([27 27 27 27],'traingd')

net=train(net,resM',resB');

clear net

net=fitnet([27 27 27],'traingd')

net=train(net,resM',resB');

net=train(net,resM,resB);

nnstart

net=fitnet([27 27 27 27],'traingd')

net=train(net,resM',resB');

%-- 12/22/2017 10:25 AM --%

net=fitnet([27 27 27],'traingd')

load('6DOFR3.n30000.L27.12.22.17.23.20.mat')

net=train(net,resM',resB');

net=fitnet([27 27 27 4],'traingd')

net=train(net,resM',resB');

resB=resB(1:10000,:)

resM=resM(1:10000,:)

net=fitnet([27 27 27 4],'traingd')

net=train(net,resM',resB');

net=fitnet([27 27 27 4],'trainscg')

net=train(net,resM',resB');

net=fitnet([27 27 27],'traingd')

view(net)

net.outputs.size=27

net.outputs.size{1}=27

net=train(net,resM',resB');

nnstart

%-- 12/22/2017 10:35 AM --%

load('6DOFR3.n30000.L27.12.22.17.23.20.mat')

net=fitnet([27 27 27],'traingd')

net=train(net,resM',resB');

nnstart

load('6DOFR3.n1000.L9261.12.09.17.00.49.mat')

net=fitnet([27 27 27],'traingd')

net=train(net,resM',resB');

load('6DOFR3.n30000.L27.12.22.17.23.20.mat')

net=fitnet([27 27 27],'traingd')

%-- 12/22/2017 10:40 AM --%

load('6DOFR3.n30000.L27.12.22.17.23.20.mat')

net=fitnet([27 27 27],'traingd')

configure(net,resB'(1,:),resM'(1,:))

configure(net,resB(1,:)',resM(1,:)')

net=configure(net,resB(1,:)',resM(1,:)')

net=train(net,resM',resB');

load('6DOFR3.n10000.L27.12.22.17.23.18.mat')

net=train(net,resM',resB');

load('6DOFR3.n1.L9261.12.10.17.10.08.mat')

net=train(net,resM',resB');

load('6DOFR3.n100.L9261.12.08.17.16.07.mat')

net=train(net,resM',resB');

net=fitnet([27 27 27],'traingd')

net=train(net,resM',resB');

DataGeneration6DOFR3

net=fitnet([8 8 8 8],'traingd')

net.trainParam.epochs=20000;

net=train(net,resM',resB');

net=fitnet([8 8 8 8],'traingd')

net=train(net,resB',resM');

net=patternnet([8 8 8 8],'traingd')

net=train(net,resM',resB');

nnstart

load('6DOFR3.N10000.E1.L9261.12.09.2017.10.54.mat')

load('6DOFR3.n30000.L27.12.22.17.23.20.mat')

net=fitnet([8 8 8 8],'traingd')

net=train(net,resM',resB');

net.outputs

net.outputs=fitnet(1)

net.outputConnect

net.outputConnect=[1 1 1 ]

net.outputConnect=[1 1 1 1 1]

net=train(net,resM',resB');

view(net)

net.outputConnect=[0 0 0 1 0]

net=train(net,resM',resB');

net=fitnet([27 27 27],'traingd')

load('6DOFR3.n30000.L27.12.22.17.23.20.mat')

net.outputConnect=[0 0 0 1 0]

net.outputConnect=[0 0 1 0]

net=train(net,resM',resB');

net.numoutputs=27

net.numoutputs

net=fitnet([27 27 27],'traingd')

net.outputConnect=[0 0 1 0]

net.trainParam.epochs=20000;

net=train(net,resM',resB');

net.layerconnect

net.layerconnect=[0 0 0 1; 1 0 0 0; 0 1 0 0 0 0 1 0]

net.layerconnect=[0 0 0 1; 1 0 0 0; 0 1 0 0; 0 0 1 0]

view(net)

net.layerconnect=[0 0 0 0; 1 0 0 0; 0 1 0 0; 0 0 1 1]

view(net)

net.layerconnect=[0 0 0 0; 1 0 0 0; 0 1 0 0; 0 0 1 0]

view(net)

net.layerconnect=[1 0 0 0 ; 0 1 0 0;0 0 1 0 0; 0 0 0 1]

net.layerconnect=[1 0 0 0 ; 0 1 0 0;0 0 1 0 ; 0 0 0 1]

view(net)

net.layerconnect=[0 0 0 1; 0 0 1 0; 0 1 0 0;1 0 0 0]

view(net)

net=fitnet([27 27 27],'traingd')

view(net)

net.trainParam.epochs=20000;

net=train(net,resM',resB');

view(net)

net=fitnet([27 27 27],'traingd')

view(net)

net.outputs

net.outputs(1)

net.outputs(1)=cell(27)

net.outputs(1)=zeros(7)

net.outputs(1)={zeros(1,2)}

net.outputs(1)={zeros(1)}

net.outputs(1)

net.outputs(1)={1}

net.outputs{1}={1}

net.outputs{1}=zeros(1,2)

net.outputs{1}

net.outputs{}

net.outputs

net.outputs(4)

net.outputs={rand(1,2),rand(1,2),rand(1,2),rand(1,2)}

net.outputConnect=[0 0 1 0]

net.trainParam.epochs=20000;

view(net)

net=train(net,resM',resB');

%-- 12/26/2017 2:15 AM --%

DataGeneration6DOFR3

a1=resB

DataGeneration6DOFR3

a2=resB

a1==a2

sum(ans)

DataGeneration6DOFR3

a1=resB

sum(a1)

DataGeneration6DOFR3

a1=resB

sum(a1)

clear all

DataGeneration6DOFR3

sum(resB)

mdl\_puma560

DataGeneration6DOFR3

sum(resB)

clear all

DataGeneration6DOFR3

sum(resB)

a1=resB

DataGeneration6DOFR3

a2=resB

a1==a2

sum(ans)

DataGeneration6DOFR3

a3=resB

sum(a3==a1)

DataGeneration6DOFR3

a4=resB

sum(a4==a3)

mdl\_puma560

p560.plot(qz)

p560.plot(qn)

p560.ikine6s(transl(1,0,0))

p560.ikine(transl(1,0,0),'mask',[1 1 1 0 0 0])

p560.ikine6s(transl(0,1,0))

p560.ikine6s(transl(0,0,1))

nnstart

x=1:1000

y=0.5^x\*0.5^(1-x)

y=0.5.^x\*0.5.^(1-x)

y=0.5.^x.\*0.5.^(1-x)

plot(x,y)

x=0:0.01:1

y=0.5.^x.\*0.5.^(1-x)

plot(x,y)

d=0.5

y=(d.^x).\*((1-d).^(1-x))

d=1

y=(d.^x).\*((1-d).^(1-x))

plot(x,y)

d=0.4

y=(d.^x).\*((1-d).^(1-x))

plot(x,y)

x=0:0.01:3

y=(d.^x).\*((1-d).^(1-x))

plot(x,y)

%-- 12/29/2017 8:32 PM --%

DataGeneration6DOFR3

resC=net1000(resM')

sum(resC)

resC=NeuralNet(resM')

resC=NeuralNet1291(resM')

resC=NeuralNet1291(resM)

sum(resC)

mapmimmax(1)

mapminmax(1)

plot(1:9261,resC)

openExample('nnet/FeatureExtractionUsingAlexNetExample')

clear all

FeatureExtractionUsingAlexNetExample

nnstart

for i= 100:120

wineTargets(:,i)=[0;0;0];

end

for i= 100:120

wineTargets(:,i)=[1;1;1];

end

nnstart

%-- 1/3/2018 11:11 AM --%

openExample('nnet/OptimizeDeepNeuralNetworksUsingBayesianOptimizationExample')

OptimizeDeepNeuralNetworksUsingBayesianOptimizationExample

ANN

net

clear all

ANN

nnstart

clear all

ANN

view(net)

ANN

net

net.layerconnect

net.layerconnect(6,6)=1

net.layerconnect

net.layerconnect(6,7)=1

view(net)

net.layerconnect(6,6)=0

net.layerconnect(6,7)=0

net.layerconnect(7,7)=0

net.layerconnect(7,7)=1

view(net)

net.layerconnect(7,7)=0

view(net)

nnstart

view(net)

net = feedforwardnet([50 200 1000 2000 5000 10000],'trainscg');

net = feedforwardnet([50],'trainscg');

view(net)

[net,tr] = train(net,resM',resB');

view(net)

net

net.layerconnect(2,2)=0

net.layerconnect(2,2)=1

view(net)

net.layerconnect(2,1)=1

view(net)

net.layerconnect(2,2)=

net.layerconnect(2,2)=0

view(net)

clear all

ANN

net=configure(net,resM'(1,:),resB'(1,:))

net=configure(net,resM(1,:),resB(1,:))

view(net)

net=configure(net,resM(:,1),resB(:,1))

view(net)

net.outputs

net.outputs.processFcns

net.outputs.processFcns=mapminmax

net.outputs{1}.processFcns=mapminmax

net.outputs{1}.processFcns

net.outputs{1}

ANN

net=init(net)

view(net)

net=init(net,resM(:,1),resB(:,1))

net=configure(net,resM(:,1),resB(:,1))

view(net)

net=configure(net,resM(:,1)',resB(:,1)')

view(net)

resM(:,1)

net=configure(net,resM(1,:)',resB(1,:)')

view(net)

net.outputs

net.outputs.processFcns

net.numOutputs

net.numOutputs=9261

net.outputConnect

net.outputs.processParams

net.inputs.processParams

net.inputs.processParams(1)

net.outputs{1}.processFcns

net.outputs(1).processFcns

net.outputs(1).processFcns=fixunknowns

nnstart

view(net)

net1

net

view(net)

%-- 1/3/2018 11:55 AM --%

nnstart

clear all

%-- 1/3/2018 1:06 PM --%

ANN

DataGeneration6DOFR3

resB1=myNet(resM)

resB1=myNet(resM')

resB1=resB1'

resB2=round(resB1)

sum(resB2==resB)

Decoder6DOFR3

DataGeneration6DOFR3

resB11=myNet(resM')

resB12=round(resB11)

sum(resB12'==resB)

sum(sum(resB12'==resB))

load('sampleData.mat')

[myNet,tr2] = train(myNet, resM', resB','showResources','yes');

DataGeneration6DOFR3

resB11=myNet(resM')

resB12=round(resB11)

res=sum(resB12'==resB)

plot(1:9261,res)

DataGeneration6DOFR3

resB11=myNet(resM')

resB12=round(resB11)

res=sum(resB12'==resB)

plot(1:9261,res)

res=sum(resB12==resB')

plot(1:500,res)

mean(res)

mean(res)/9261

1e5

ANN

load('6DOFR3.n1.L9261.01.03.18.06.41.mat')

resB11=myNet(resM')

resB12=round(resB11)

res=sum(resB12==resB')

Decoder6DOFR3

resB11=myNet(resM')

resB11=resB11'

Decoder6DOFR3

F1

resB12=round(resB11)

F1

DataGeneration6DOFR3

resB11=myNet(resM')

resB12=round(resB11)

resB12=resB12'

F1

for i=1:50

f1(i)=2\*(res(1,i)\*res(2,i))/(res(1,i)+res(2,i));

end

plot(1:50,f1)

ANN

load('6DOFR3.n500.L9261.01.03.18.20.13.mat')

resB11=myNet(resM')

round(0.6)

round(0.5)

round(0.4)

resB12=round(resB11)

resB12=resB12'

F1

ANN

load('6DOFR3.n500.L9261.01.03.18.20.13.mat')

resB11=myNet(resM');

resB12=round(resB11);

resB12=resB12'

F1

plot(1:500,f1)

mean(f1)

load('6DOFR3.n1.L9261.12.30.17.09.34.mat')

resB11=myNet(resM');

resB12=round(resB11);

resB12=resB12'

sum(resB12==resB)

F1

f1

load('C:\Users\Alexander Liao\Google Drive\Guild Paper\NNIBMtrain\6DOFR3\Old\6DOFR3.N10000.E1.L9261.12.09.2017.10.54.mat')

ANN

max(resM(:,9))

ANN

1/20

DataGeneration6DOFR3

resB11=myNet(resM');

resB12=round(resB11);

resB12=resB12'

F1

max(resM(:,9))

test=myNet(resM')

for i=1:9261

for j=1:100

if test(i,j)>0.3

rounded(i,j)==1

else

rounded(i,j)==0

end

end

end

rounded=[];

for i=1:9261

for j=1:100

if test(i,j)>0.3

rounded(i,j)==1

else

rounded(i,j)==0

end

end

end

rounded=round(test)

sum(rounded'==resB)

f=sum(rounded'==resB)

plot(1:9261,f)

DataGeneration6DOFR3

DataGeneration5DOFSO3(1,[ -pi pi -pi pi -pi pi pi pi pi ],[.4 .4 .4])

load('5DOFSO3.n1.L27.01.04.18.18.41.mat')

2.5e4

%-- 1/5/2018 8:04 AM --%

mdl\_puma560

p560.plot(qz)

ANN

%-- 1/7/2018 4:58 PM --%

D2m

figure

m.plot([pi/4 pi/4 pi/4 pi/4 pi/4 pi/4]);

hold on;

scatter3(fXData,fYData,fZData,20,dexMap,'filled')

figure

scatter3(fXData,fYData,fZData,20,binBound,'filled')

figure

scatter3(fXData,fYData,fZData,20,binMap,'filled')

D2m

m.plot([pi/4 pi/4 pi/4 pi/4 pi/4 pi/4]);

hold on;

scatter3(fXData,fYData,fZData,20,dexMap,'filled')

figure

scatter3(fXData,fYData,fZData,20,binBound,'filled')

figure

scatter3(fXData,fYData,fZData,20,binMap,'filled')

D2m

m.plot([pi/4 pi/4 pi/4 pi/4 pi/4 pi/4]);

hold on;

scatter3(fXData,fYData,fZData,20,dexMap,'filled')

figure

scatter3(fXData,fYData,fZData,20,binBound,'filled')

figure

scatter3(fXData,fYData,fZData,20,binMap,'filled')

\

%-- 1/9/2018 7:46 PM --%

csvwrite('testInput.csv',resM)

csvwrite('testOutput.csv',resB)

csvwrite('testInput.csv',resM')

csvwrite('testOutput.csv',resB')

m=resM'

csvwrite('testInputT.csv',resM)

csvwrite('testInputT.csv',resM')

csvwrite('testOutputT.csv',resB')

clear all

load('sample.mat')

ANN

[myNet,tr2] = train(myNet, resM', resB','showResources','yes');

test=myNet(resM');

test=myNet(resM);

myNet.inputs{1}.size

load('sample.mat')

ANN

clear tr re2 myNet

ANN

test=myNet(resM');

test=test'

testR=round(test)

testR=resB

sum(testR=resB)

sum(testR==resB)

sum(sum(testR==resB)))

sum(sum(testR==resB))

result=testR==resB

resB1=sum(resB)

resB1=sum(resB')

resB2=sum(test')

resB3=abs(resB1-resB2)

resB3=abs(resB1-resB2)/125

plot(1:1000,resB3)

M=mean(resB)

M2=mean(test\_

M2=mean(test)

absmean=abs(M-M2)

Decoder6DOFR3

scatter3(fXData,fYData,fZData,100,binMap,'filled')

save('N125CgpTr1.mat','myNet','tr')

Temp

ANN

test=myNet(resM');

test=test'

testR=round(test)

sum(sum(testR==resB)))

sum(sum(testR==resB))

ANN

test=myNet(resM');

test=test'

testR=round(test)

sum(sum(testR==resB))

Temp

load('6DOFR3.n50000.L27.01.10.18.21.44.mat')

Temp

clear all

ANN

Temp

load('6DOFR3.n150000.L27.01.10.18.23.13.mat')

ANN

%-- 1/10/2018 11:23 PM --%

load('6DOFR3.n150000.L27.01.10.18.23.13.mat')

ANN

Temp

load('6DOFR3.n1000.L27.01.10.18.19.47.mat')

test=myNet(resM');

load('6DOFR3.n10000.L27.01.11.18.10.31.mat')

test=myNet(resM');

test=test'

testR=round(test)

sum(sum(testR==resB))

ans/270000

resB1=sum(resB')

resB2=sum(test')

resB3=abs(resB1-resB2)/27

plot(1:10000,resB3)

M=mean(resB)

M2=mean(test)

absmean=abs(M-M2)

Decoder6DOFR3

load('6DOFR3.n150000.L27.01.10.18.23.13.mat')

save('N27CgpTr1.mat','myNet','tr')

clear all

load('6DOFR3.n150000.L27.01.10.18.23.13.mat')

ANN

%-- 1/11/2018 2:22 PM --%

load('6DOFR3.n150000.L27.01.10.18.23.13.mat')

ANN

load('6DOFR3.n50000.L27.01.10.18.21.44.mat')

test=myNet(resM');

test=test'

testR=round(test)

sum(sum(testR==resB))

ans/(50000\*27)

resB1=sum(resB')

resB2=sum(test')

resB3=abs(resB1-resB2)/27

plot(1:50000,resB3)

mean(resB3)

scatter(1:50000,resB3)

scatter(1:50000,resB3,5,'fille')

scatter(1:50000,resB3,5,'filled')

sum(sum(resB3>.1))

save('N27gdmTr1.mat','myNet','tr')

load('N27CgpTr1.mat')

test=myNet(resM');

test=test'

testR=round(test)

sum(sum(testR==resB))

ans/(50000\*27)

resB1=sum(resB')

resB2=sum(test')

resB3=abs(resB1-resB2)/27

plot(1:50000,resB3)

scatter(1:50000,resB3,5,'filled')

sum(sum(resB3>.05))

clear all

load('6DOFR3.n200000.L9261.01.11.18.06.19.mat')

clear all

%-- 1/11/2018 6:15 PM --%

load('6DOFR3.n200000.L9261.01.11.18.06.19.mat')

load('6DOFSO3.n100000.L1331.01.11.18.14.48.mat')

ANN

DataGeneration6DOFSO3(100,[ 0 2\*pi 0 2\*pi 0 2\*pi pi/10 pi/10 pi/10 ],[.5 .5 .5])

load('6DOFSO3.n100.L9261.01.12.18.07.13.mat')

test=myNet(resM');

DataGeneration6DOFSO3(100,[ 0 2\*pi 0 2\*pi 0 2\*pi pi/8 pi/8 pi/8 ],[1 0 0])

DataGeneration6DOFSO3(100, [ 0 2\*pi 0 2\*pi 0 2\*pi pi/3 pi/3 pi/3 ],[.5 .5 .5])

DataGeneration6DOFSO3(100, [ 0 pi 0 pi 0 pi pi/10 pi/10 pi/10 ],[.5 .5 .5])

load('6DOFSO3.n100.L1331.01.12.18.12.48.mat')

test=myNet(resM');

test=test';

testR=round(test)

sum(sum(testR==resB))

resB1=sum(resB')

resB2=sum(test')

resB3=abs(resB1-resB2)/27

myNet

DataGeneration6DOFSO3(100, [ 0 pi 0 pi 0 pi pi/10 pi/10 pi/10 ],[.5 .5 .5])

load('6DOFSO3.n100.L1331.01.12.18.12.53.mat')

test=myNet(resM');

test=test';

testR=round(test)

sum(sum(testR==resB))

sum(sum(resB))

DataGeneration6DOFSO3(100, [ 0 pi 0 pi 0 pi pi/10 pi/10 pi/10 ],[.5 .5 .5])

clear all

load('6DOFSO3.n200000.L9261.01.11.18.10.46.mat')

load('6DOFR3.n200000.L9261.01.11.18.06.19.mat')

load('6DOFSO3.n100000.L1331.01.11.18.14.48.mat')

ANN

%-- 1/12/2018 4:11 PM --%

load('6DOFR3.n150000.L27.01.10.18.23.13.mat')

ANN

load('6DOFR3.n50000.L125.01.08.18.14.39.mat')

test=myNet(resM');

load('6DOFR3.n10000.L27.01.08.18.14.33.mat')

test=myNet(resM');

test=test';

testR=round(test)

sum(sum(testR==resB))

ans/270000

resB1=sum(resB')

resB2=sum(test')

resB3=abs(resB1-resB2)/27

plot(1:10000,resB3)

scatter(1:10000,resB3,5,'filled')

sum(sum(resB3>.05))

Decoder6DOFR3

M

M=mean(resB)

M2=mean(test)

absmean=abs(M-M2)

Decoder6DOFR3

save('N27gdxTr1.mat','myNet','tr')

clear all

load('6DOFSO3.n100000.L1331.01.11.18.14.48.mat')

ANN

DataGeneration6DOFSO3(100, [ 0 pi 0 pi 0 pi pi/10 pi/10 pi/10 ],[.5 .5 .5])

load('6DOFSO3.n100.L1331.01.13.18.09.10.mat')

test=myNet(resM');

test=test';

testR=round(test)

sum(sum(testR==resB))

sum(resB)

sum(sum(resB))

M=mean(resB)

M2=mean(test)

absmean=abs(M-M2)

Decoder6DOFSO3

load('6DOFSO3.n100000.L1331.01.11.18.14.48.mat')

sum(resB0

sum(resB)

sum(sum(resB))

ans/(1e5\*1331)

load('6DOFSO3.n100.L1331.01.13.18.09.10.mat')

resB1=sum(resB')

resB2=sum(test')

resB3=abs(resB1-resB2)/27

test=myNet(resM');

test=test'

resB2=sum(test')

resB3=abs(resB1-resB2)/1331

scatter(1:100,resB3,5,'filled')

save('N1331SO3ossTr1.mat','myNet','tr')

save('N1331SO3ossTr1.mat','myNet')

load('6DOFSO3.n100000.L1331.01.11.18.14.48.mat')

clear all

load('6DOFSO3.n100000.L1331.01.11.18.14.48.mat')

ANN

load('6DOFSO3.n100.L1331.01.13.18.09.10.mat')

save('N1331SO3rpTr1.mat','myNet',tr)

save('N1331SO3rpTr1.mat','myNet','tr')

test=myNet(resM');

test=test'

testR=round(test)

sum(sum(resB))

test=myNet(resM');

load('6DOFSO3.n100000.L1331.01.11.18.14.48.mat')

ANN

load('6DOFSO3.n100.L1331.01.13.18.09.10.mat')

test=myNet(resM');

test=test'

testR=round(test)

load('6DOFSO3.n100000.L1331.01.11.18.14.48.mat')

ANN

DataGeneration6DOFSO3(1e3, [ 0 pi 0 pi 0 pi pi/10 pi/10 pi/10 ],[.5 .5 .5])

load('6DOFSO3.n1000.L1331.01.13.18.20.32.mat')

test=myNet(resM');

test=test'

testR=round(test)

sum(sum(testR==resB))

resB1=sum(resB')

resB2=sum(test')

resB3=abs(resB1-resB2)/1331

plot(1:1000,resB3)

scatter(1:1000,resB3,5,'filled')

M=mean(resB)

M2=mean(test)

absmean=abs(M-M2)

Decoder6DOFSO3

load('6DOFSO3.n100000.L1331.01.11.18.14.48.mat')

Test

DataGeneration5DOFSO3(1e3,[ 0 2\*pi 0 2\*pi 0 2\*pi pi/3 pi/3 pi/3] ,[.5 .5 .5])

DataGeneration5DOFSO3(1e3,[ 0 pi 0 pi 0 pi pi/3 pi/3 pi/3] ,[.5 .5 .5])

DataGeneration5DOFSO3(1e3,[ 0 2\*pi 0 2\*pi 0 2\*pi pi/2 pi/2 pi/2] ,[.5 .5 .5])

DataGeneration5DOFSO3(1e3,[0 2\*pi 0 2\*pi 0 2\*pi pi/3 pi/3 pi/3] ,[1 0 0])

DataGeneration5DOFSO3(3,[ 0 2\*pi 0 2\*pi 0 2\*pi pi/3 pi/3 pi/3] ,[.5 .5 .5])

DataGeneration5DOFSO3(3,[ 0 pi 0 pi 0 pi pi/3 pi/3 pi/3] ,[.5 .5 .5])

DataGeneration5DOFSO3(3,[ 0 2\*pi 0 2\*pi 0 2\*pi pi/2 pi/2 pi/2] ,[.5 .5 .5])

DataGeneration5DOFSO3(3,[0 2\*pi 0 2\*pi 0 2\*pi pi/3 pi/3 pi/3] ,[1 0 0])

load('5DOFR3.n3.L27.01.13.18.23.07.mat')

myNet

save('Temp.mat','myNet','tr')

clear all

load('5DOFR3.n3.L27.01.13.18.23.08.mat')

DataGeneration6DOFR3(2e5,[-1 1 -1 1 -1 1 1 1 1])

%-- 1/14/2018 12:01 AM --%

Test

load('5DOFR3.n3.L27.01.14.18.00.37.mat')

load('5DOFR3.n3.L27.01.14.18.00.38.mat')

load('6DOFR3.n3.L9261.01.14.18.00.26.mat')

load('6DOFR3.n3.L9261.01.14.18.00.27.mat')

load('6DOFR3.n3.L29791.01.14.18.00.31.mat')

load('5DOFSO3.n3.L343.01.14.18.00.41.mat')

load('5DOFR3.n3.L125.01.14.18.00.41.mat')

load('6DOFR3.n200000.L27.01.14.18.00.11.mat')

ANN

C

load('6DOFR3.n50000.L729.01.14.18.07.52.mat')

f1=resM

f2=resB;

load('6DOFR3.n50000.L729.01.14.18.04.43.mat')

resM=vertcat(resM,f1)

resB=vertcat(resB,f2);

ANN

Untitled2

Train1

%-- 1/18/2018 1:03 PM --%

mdl\_puma560

p560.ikine(1)

F = X.\*exp(-X.^2-Y.^2);

surf(X,Y,F)

X=1:100

Y=1:100

F = X.\*exp(-X.^2-Y.^2);

surf(X,Y,F)

x = -2:0.25:2;

y = x;

[X,Y] = meshgrid(x);

F = X.\*exp(-X.^2-Y.^2);

surf(X,Y,F)

%-- 1/18/2018 9:06 PM --%

Train1

%-- 1/18/2018 9:52 PM --%

mdl\_puma560

tr2delta(p560.ikine(qn),p560.ikine(qz))

p560.ikine(qn)

tr2delta(p560.fkine(qn),p560.fkine(qz))

%-- 1/20/2018 1:42 PM --%

DataGeneration6DOFR3(5e4,[-1 1 -1 1 -1 1 .1 .1 .1] ,[0 0 0])

save('6R3\_0.1\_0\_0\_0\_5e4.mat','resM','resB','-v7.3')

CompareGroup

clear all

load('6DOFR3.n20000.L9261.01.24.18.06.09.mat')

resM1=resM;

first

load('6R3\_0.1\_0\_0\_0\_5e4.mat')

first2

load('6DOFR3.n20000.L9261.01.24.18.06.09.mat')

Compare

mean(resM(:,19:84)

mean(resM(:,19:84))

resM1(:,19:84))

resM1(:,19:84)

mean(resM(:,19:84))==mean(resM1(:,19:84));

Compare

mean(resM2(:,19:84))'

mean(resM2(:,19:84));

mean(resM(:,19:84));

mean(resM2(:,19:84))

mean(resM2(:,19:84));

mean(resM2(:,19:84))

mean(resM(:,19:84))==mean(resM2(:,19:84))

l2=all(round(mean(resM(:,19:84)),4)==round(mean(resM2(:,19:84)),4));

Compare

load('6DOFR3.n20000.L9261.01.24.18.08.23.mat')

load('6DOFR3.n20000.L9261.01.24.18.10.17.mat')

Compare

second

Compare

save('6R3\_0.1\_0\_0\_0\_9e4.mat','resM','resB','-v7.3')

load('6DOFR3.n20000.L9261.01.24.18.08.23.mat')

clear all

load('6DOFR3.n20000.L9261.01.24.18.08.23.mat')

a=[1,NaN]

mean(a)

a=[1,NaN,2,3,4,5,6]

mean(a)

a=[1,Inf,2,3,4,5,6]

a=[1,Inf,2,-Inf,4,5,6]

mean(a)

clear a ans

load('6DOFR3.n20000.L9261.01.24.18.08.23.mat')

load('6DOFR3.n20000.L9261.01.24.18.10.35.mat')

load('6DOFR3.n20000.L9261.01.24.18.08.23.mat')

first

load('6DOFR3.n20000.L9261.01.24.18.12.29.mat')

first2

load('6DOFR3.n20000.L9261.01.24.18.12.51.mat')

load('6DOFR3.n20000.L9261.01.24.18.14.40.mat')

load('6DOFR3.n20000.L9261.01.24.18.15.06.mat')

load('6DOFR3.n20000.L9261.01.24.18.16.51.mat')

load('6DOFR3.n20000.L9261.01.24.18.16.56.mat')

load('6DOFR3.n20000.L9261.01.24.18.19.06.mat')

load('6DOFR3.n20000.L9261.01.24.18.19.10.mat')

load('6DOFR3.n20000.L9261.01.24.18.20.57.mat')

load('6DOFR3.n20000.L9261.01.24.18.21.04.mat')

Compare

load('6R3\_0.1\_.5pi\_0\_0\_2e4.mat')

Compare

second

Compare

1:(size(resM)/2)

(size(resM)/2):size(resM)

round(mean(resM(1:(size(resM)/2),19:84)),4)

round(mean(resM2((size(resM)/2):size(resM),19:84)),4)

Compare

save('6R3\_0.1\_.5pi\_0\_0\_6e4.mat','resM','resB','-v7.3')

load('6DOFR3.n20000.L9261.01.24.18.12.29.mat')

clear all

load('6DOFR3.n20000.L9261.01.24.18.10.35.mat')

first

load('6DOFR3.n20000.L9261.01.24.18.12.51.mat')

load('6DOFR3.n20000.L9261.01.24.18.14.40.mat')

first2

load('6R3\_0.1\_0\_.5pi\_0\_2e4.mat')

Compare

second

Compare

load('6R3\_0.1\_0\_.5pi\_0\_6e4.mat')

save('6R3\_0.1\_0\_.5pi\_0\_6e4.mat',"-v7.3")

clear all

load('6DOFR3.n20000.L9261.01.24.18.12.51.mat')

first

load('6DOFR3.n20000.L9261.01.24.18.15.06.mat')

load('6DOFR3.n20000.L9261.01.24.18.16.51.mat')

first2

load('6R3\_0.1\_0\_0\_.5pi\_2e4.mat')

Compare

second

Compare

save('6R3\_0.1\_0\_0\_.5pi\_6e4.mat',"-v7.3")

clear all

load('6R3\_0.1\_0\_0\_0\_9e4.mat')

clear all

load('6R3\_0.1\_.5pi\_0\_0\_6e4.mat')

load('6R3\_0.1\_0\_.5pi\_0\_6e4.mat')

save('6R3\_0.1\_0\_.5pi\_0\_6e4.mat',"resM","resB",'-v7.3')

clear all

load('6R3\_0.1\_.5pi\_0\_0\_6e4.mat')

clear all

load('6R3\_0.1\_0\_.5pi\_0\_6e4.mat')

clear all

load('6R3\_0.1\_0\_0\_.5pi\_6e4.mat')

save('6R3\_0.1\_0\_0\_.5pi\_6e4.mat',"resM","resB","-v7.3")

clear all

load('6R3\_0.1\_0\_0\_.5pi\_6e4.mat')

load('6DOFR3.n20000.L9261.01.24.18.12.51.mat')

load('6DOFR3.n20000.L9261.01.24.18.16.51.mat')

load('6DOFR3.n20000.L9261.01.24.18.15.06.mat')

first

load('6DOFR3.n20000.L9261.01.24.18.16.56.mat')

load('6DOFR3.n20000.L9261.01.24.18.19.06.mat')

first2

load('6R3\_0.1\_.25pi\_.25pi\_.25pi\_2e4.mat')

Compare

second

Compare

save('6R3\_0.1\_.25pi\_.25pi\_.25pi\_6e4.mat','resB','resM','-v7.3')

clear all

load('6DOFR3.n20000.L9261.01.24.18.16.56.mat')

first

load('6DOFR3.n20000.L9261.01.24.18.19.10.mat')

Compare

load('6DOFR3.n20000.L9261.01.24.18.20.57.mat')

Compare

first2

load('6R3\_0.1\_0\_0\_0\_02-11-11\_2e4.mat')

Compare

second

Compare

save('6R3\_0.1\_0\_0\_0\_02-11-11\_6e4.mat','resB','resM','-v7.3')

clear resB resM

load('6R3\_0.1\_0\_0\_0\_02-11-11\_6e4.mat')

Compare

clear all

load('6DOFR3.n20000.L9261.01.24.18.16.56.mat')

load('6DOFR3.n20000.L9261.01.24.18.19.10.mat')

load('6DOFR3.n20000.L9261.01.24.18.21.04.mat')

first

load('6DOFR3.n20000.L9261.01.24.18.23.01.mat')

load('6DOFR3.n20000.L9261.01.24.18.23.07.mat')

load('6DOFR3.n20000.L9261.01.25.18.00.59.mat')

first2

load('6R3\_0.1\_0\_0\_0\_-1102-11\_2e4.mat')

Compare

second

Compare

save('6R3\_0.1\_0\_0\_0\_-1102-11\_6e4.mat','resB','resM','-v7.3')

clear all

load('6DOFSO3.n10000.L343.01.22.18.22.08.mat')

load('6DOFR3.n20000.L9261.01.25.18.04.57.mat')

first

load('6DOFR3.n20000.L9261.01.25.18.02.52.mat')

load('6DOFR3.n20000.L9261.01.25.18.01.01.mat')

first2

load('6R3\_0.1\_0\_0\_0\_-.51.5-.51.5-.51.5\_2e4.mat')

Compare

second

Compare

save('6R3\_0.1\_0\_0\_0\_-.51.5-.51.5-.51.5\_6e4.mat','resM','resB','-v7.3')

clear all

load('6R3\_0.1\_0\_0\_0\_-.51.5-.51.5-.51.5\_6e4.mat')

Compare

clear all

load('6DOFR3.n20000.L9261.01.25.18.04.57.mat')

load('6DOFR3.n20000.L9261.01.24.18.23.07.mat')

load('6DOFR3.n20000.L9261.01.24.18.19.10.mat')

load('6DOFR3.n20000.L9261.01.24.18.23.01.mat')

load('6DOFR3.n20000.L9261.01.24.18.23.07.mat')

load('6DOFR3.n20000.L9261.01.25.18.02.52.mat')

clear all

load('6R3\_0.1\_0\_0\_0\_9e4.mat')

first

load('6DOFR3.n20000.L9261.01.24.18.19.10.mat')

first2

load('6DOFR3.n20000.L9261.01.24.18.23.01.mat')

Compare

round(mean(resM(:,19:84)),4)==round(mean(resM1(:,19:84)),4)

first

clear resM2 resB2

load('6DOFR3.n20000.L9261.01.24.18.23.07.mat')

load('6DOFR3.n20000.L9261.01.25.18.02.52.mat')

first2

Compare

load('6R3\_0.1\_0\_0\_0\_-11-1102\_2e4.mat')

Compare

second

Compare

save('6R3\_0.1\_0\_0\_0\_-11-1102\_6e4.mat','resB','resM','-v7.3')

clear a

clear all

load('6DOFR3.n20000.L9261.01.24.18.23.01.mat')

clear all

load('6R3\_0.1\_0\_0\_0\_9e4.mat')

first

load('6DOFR3.n20000.L9261.01.24.18.19.10.mat')

first2

load('6DOFR3.n20000.L9261.01.24.18.23.07.mat')

second

Compare

save('6R3\_0.1\_0\_0\_0\_1.3e5.mat','resB','resM','-v7.3')

clear all

load('5DOFR3.n20000.L27.01.24.18.07.51.mat')

first

load('5DOFR3.n20000.L27.01.24.18.07.52.mat')

first

load('5DOFR3.n20000.L27.01.24.18.07.51.mat')

first

load('5DOFR3.n20000.L27.01.24.18.07.52.mat')

first2

load('5DOFR3.n20000.L27.01.25.18.10.29.mat')

second

first

load('5DOFR3.n10000.L27.01.22.18.23.17.mat')

first2

load('5DOFR3.n10000.L27.01.22.18.23.18.mat')

second

first

load('5DOFR3.n10000.L27.01.23.18.03.29.mat')

second

save('5R3\_1\_0\_0\_0\_9e4.mat','resB','resM','-v7.3')

load('5R3\_1\_0\_0\_0\_9e4.mat')

clear all

load('5R3\_1\_0\_0\_0\_9e4.mat')

clear all

load('5DOFR3.n10000.L125.01.22.18.23.17.mat')

first

load('5DOFR3.n10000.L125.01.22.18.23.21.mat')

load('5DOFR3.n20000.L125.01.25.18.10.30.mat')

load('5DOFR3.n20000.L125.01.25.18.10.28.mat')

first2

load('5DOFR3.n10000.L125.01.22.18.23.21.mat')

load('5DOFR3.n10000.L125.01.23.18.03.28.mat')

Compare

second

Compare

first

load('5DOFR3.n10000.L125.01.23.18.03.32.mat')

load('5DOFR3.n20000.L125.01.24.18.07.51.mat')

Compare

first2

load('5DOFR3.n20000.L125.01.24.18.07.53.mat')

load('5DOFR3.n20000.L125.01.25.18.10.30.mat')

second

save('5R3\_.5\_0\_0\_0\_6e4.mat','resB','resM','-v7.3')

load('5R3\_1\_0\_0\_0\_9e4.mat')

load('5DOFR3.n20000.L125.01.24.18.07.51.mat')

load('5DOFR3.n20000.L125.01.25.18.10.30.mat')

load('5DOFR3.n20000.L125.01.24.18.07.51.mat')

load('5DOFR3.n20000.L125.01.25.18.10.30.mat')

clear all

load('5DOFR3.n20000.L125.01.25.18.10.30.mat')

first

load('5DOFR3.n20000.L125.01.24.18.07.53.mat')

first2

load('5DOFR3.n10000.L125.01.23.18.03.32.mat')

Compare

second

first

clear all

load('5DOFR3.n20000.L125.01.25.18.10.30.mat')

first

load('5DOFR3.n20000.L125.01.24.18.07.53.mat')

first2

load('5DOFR3.n10000.L125.01.23.18.03.32.mat')

first3

load('5DOFR3.n10000.L125.01.22.18.23.21.mat')

Compare

second

save('5R3\_.5\_pi/4\_0\_0\_6e4.mat','resB','resM','-v7.3')

save('5R3\_.5\_.25pi\_0\_0\_6e4.mat','resB','resM','-v7.3')

%-- 1/26/2018 4:17 PM --%

load('6DOFSO3.n20000.L9261.01.25.18.09.07.mat')

first

load('6DOFSO3.n20000.L9261.01.24.18.06.24.mat')

first2

load('6DOFSO3.n10000.L9261.01.23.18.02.15.mat')

first3

load('6DOFSO3.n10000.L9261.01.22.18.22.03.mat')

Compare

second

Compare

save('6SO3\_.1pi\_0.5\_0.5\_0.5\_6e4.mat','resB','resM','-v7.3')

load('6DOFSO3.n20000.L4913.01.25.18.10.27.mat')

clear all

load('6DOFSO3.n20000.L4913.01.25.18.10.27.mat')

first

load('6DOFSO3.n20000.L4913.01.24.18.07.50.mat')

first2

load('6DOFSO3.n10000.L4913.01.23.18.03.25.mat')

first3

load('6DOFSO3.n10000.L4913.01.22.18.23.14.mat')

second

Compare

save('6SO3\_.125pi\_1\_0\_0\_6e4.mat','resB','resM','-v7.3')

clear all

load('6DOFR3.n20000.L29791.01.25.18.06.31.mat')

webcamlist

clear

load('6DOFSO3.n20000.L1331.01.25.18.09.36.mat')

first

load('6DOFSO3.n20000.L1331.01.24.18.06.52.mat')

first2

load('6DOFSO3.n10000.L1331.01.23.18.02.39.mat')

first3

load('6DOFSO3.n10000.L1331.01.22.18.22.26.mat')

Compare

second

save('6SO3\_.33pi\_0.5\_0.5\_0.5\_0pi0pi0pi\_6e4.mat','resB','resM','-v7.3')

%-- 1/26/2018 4:54 PM --%

load('6DOFSO3.n20000.L343.01.25.18.09.13.mat')

first

load('6DOFSO3.n20000.L343.01.24.18.06.30.mat')

first2

load('6DOFSO3.n10000.L343.01.23.18.02.20.mat')

first3

load('6DOFSO3.n10000.L343.01.22.18.22.08.mat')

Compare

second

Compare

save('6SO3\_.33pi\_0.5\_0.5\_0.5\_6e4.mat','resB','resM','-v7.3')

clear all

load('5DOFSO3.n20000.L64.01.25.18.10.34.mat')

first

load('5DOFSO3.n20000.L64.01.24.18.07.57.mat')

first2

load('5DOFSO3.n10000.L64.01.23.18.03.42.mat')

first3

load('5DOFSO3.n10000.L64.01.22.18.23.30.mat')

Compare

second

save('5SO3\_.33pi\_0.5\_0.5\_0.5\_6e4.mat','resB','resM','-v7.3')

clear all

load('5DOFSO3.n20000.L125.01.25.18.10.35.mat')

%-- 1/26/2018 6:04 PM --%

load('5DOFSO3.n20000.L343.01.25.18.10.39.mat')

load('5DOFSO3.n20000.L125.01.25.18.10.35.mat')

first

load('5DOFSO3.n20000.L125.01.24.18.07.58.mat')

first2

load('5DOFSO3.n10000.L125.01.23.18.03.45.mat')

first3

load('5DOFSO3.n10000.L125.01.22.18.23.33.mat')

Compare

second

save('5SO3\_.5pi\_0.5\_0.5\_0.5\_6e4.mat','resB','resM','-v7.3')

clear all

load('5DOFSO3.n20000.L343.01.25.18.10.39.mat')

first

load('5DOFSO3.n20000.L343.01.25.18.10.34.mat')

load('5DOFSO3.n20000.L343.01.24.18.08.02.mat')

first2

load('5DOFSO3.n10000.L343.01.23.18.03.53.mat')

first3

load('5DOFSO3.n10000.L343.01.23.18.03.40.mat')

load('5DOFSO3.n10000.L343.01.22.18.23.41.mat')

Compare

second

first

load('5SO3\_.33pi\_0.5\_0.5\_0.5\_6e4.mat')

load('5SO3\_.5pi\_0.5\_0.5\_0.5\_6e4.mat')

load('5SO3\_.33pi\_0.5\_0.5\_0.5\_6e4.mat')

load('5SO3\_.5pi\_0.5\_0.5\_0.5\_6e4.mat')

load('5SO3\_.33pi\_0.5\_0.5\_0.5\_6e4.mat')

save('5SO3\_.5pi\_0.5\_0.5\_0.5\_6e4\_NEW.mat','resB','resM','-v7.3')

load('5SO3\_.5pi\_0.5\_0.5\_0.5\_6e4.mat')

load('5SO3\_.33pi\_0.5\_0.5\_0.5\_6e4.mat')

save('5SO3\_.33pi\_0.5\_0.5\_0.5\_0pi0pi0pi\_6e4.mat','resB','resM','-v7.3')

resB=resB1

resM=resM1;

save('5SO3\_.33pi\_1\_0\_0\_6e4.mat','resB','resM','-v7.3')

load('5DOFSO3.n20000.L343.01.24.18.08.02.mat')

load('5DOFSO3.n10000.L343.01.23.18.03.53.mat')

load('5DOFSO3.n10000.L343.01.22.18.23.41.mat')

clear all

load('5DOFSO3.n20000.L343.01.25.18.10.34.mat')

first

load('5DOFSO3.n20000.L343.01.24.18.07.56.mat')

first2

load('5DOFSO3.n10000.L343.01.23.18.03.40.mat')

first3

load('5DOFSO3.n10000.L343.01.22.18.23.29.mat')

Compare

second

Compare

save('5SO3\_.33pi\_0.5\_0.5\_0.5\_6e4.mat','resB','resM','-v7.3')

clear all

myNet = feedforwardnet([100 50 50 50 50 50 100],'trainscg');

layers = [ ...

sequenceInputLayer(12)

lstmLayer(100,'OutputMode','last')

fullyConnectedLayer(9)

softmaxLayer

classificationLayer]

myNet

%-- 1/26/2018 6:41 PM --%

load('data.mat')

Test1261

myNet = feedforwardnet([100 50 50 50 50 50 100],'trainscg');

myNet

myNet = feedforwardnet([100 50 50 50 50 50 100],'trainscg');

myNet.layers

a=ans

a{1}

a{4}

myNet.layers{1}=reluLayer

help nnetinput

myNet.layers{1}.netInputFcn

myNet.layers{1}

Test1261

size(resB,3)

size(resB,1)

size(resB,2)

Test1261

exampleRegressionMAELayer

Test1261

load('6R3\_0.5\_0\_0\_0\_1.6e5.mat')

Test1261

openExample('nnet/TrainABasicConvolutionalNeuralNetworkForClassificationExample')

TrainABasicConvolutionalNeuralNetworkForClassificationExample

clear all

Test1261

load('6R3\_0.5\_0\_0\_0\_1.6e5.mat')

categorical(resB)

%-- 1/26/2018 8:05 PM --%

load('6R3\_0.5\_0\_0\_0\_1.6e5.mat')

Test1261

myNet = feedforwardnet([100 50 50 50 50 50 100],'trainscg');

myNet.performFcn

myNet

ANN

clear all

load('data.mat')

myNet = feedforwardnet([100 50 100],'trainscg');

myNet.trainParam.epochs = 5000;

myNet.output.processFcns={'fixunknowns'}

myNet.input.processFcns={'fixunknowns'}

[myNet,tr] = train(myNet, resM', resB','showResources','yes');

tr.perf

Test1261

y=mean(final)

y2=std(final)

lo=y+y2

lo=y-y2

hi=y+y2

x=1:51

hp = patch([x; x(end:-1:1); x(1)], [lo; hi(end:-1:1); lo(1)], 'r');

hold on;

hl = line(x,y);

set(hp, 'facecolor', [1 0.8 0.8], 'edgecolor', 'none');

set(hl, 'color', 'r', 'marker', 'x');

hp = patch([x; x(end:-1:1); x(1)], [lo; hi(end:-1:1); lo(1)], 'r');

fill([x fliplr(x)], [yu fliplr(yl)], [.9 .9 .9], 'linestyle', 'none')

hold all

plot(x,y)

fill([x fliplr(x)], [hi fliplr(lo)], [.9 .9 .9], 'linestyle', 'none')

semilogy(x,y\_

semilogy(x,y)

hold on

fill([x fliplr(x)], [hi fliplr(lo)], [.9 .9 .9], 'linestyle', 'none')

hold on

plot(x,y)

fill([x fliplr(x)], [hi fliplr(lo)], [0.2 0.3 0.2], 'linestyle', 'none')

fill([x fliplr(x)], [hi fliplr(lo)], [0.8 0.8 0.7], 'linestyle', 'none')

hold on

plot(x,y,'lineWidth',5)

fill([x fliplr(x)], [hi fliplr(lo)], [0.8 0.8 0.7], 'linestyle', 'none')

hold on

semilogy(x,y,'lineWidth',2)

semilogy(x,y,'lineWidth',1.5)

hold on

fill([x fliplr(x)], [hi fliplr(lo)], [0.8 0.8 0.7], 'linestyle', 'none')

hold on

semilogy(x,y,'lineWidth',1.5)

load('6R3\_0.1\_0\_0\_0\_1.3e5.mat')

Test1261

HELP MEMORY

help MEMORY

resB=resB(1:50000,:)

%-- 1/26/2018 10:30 PM --%

load('6R3\_0.1\_0\_0\_0\_1.3e5.mat')

resB=(1:50000,:);

resB=resB(1:50000,:);

resM=resM(1:50000,:);

Test1261

data{1}=resB(1:25000,:)

data{2}=resB(25001:50000,:);

label{1}=resM(1:25000,:);

label{2}=resM(25001:50000,:);

Test1261

data{1}=data{1}'

data{2}=data{2}'

label{1}=label{1}'

label{2}=label{2}'

Test1261

tr.perf

i=1

help nnperformance

Test1261

help nnperformance

Test1261

myNet.performFcn

help nnperformance

myNet.performFcn=crossentropy()

myNet.performFcn=crossentropy

myNet.performFcn="crossentropy"

myNet.performFcn='crossentropy'

myNet.performFcn='L2Regularization'

myNet.performFcn='msesparse'

myNet.performFcn='msesparse(L2Regularization)'

sgd

Test1261

sgd

Test1261

tr.perf

Test1261

clear finalG finalPerf finalTperf finalVperf

Test1261

clear finalG finalPerf finalTperf finalVperf

Test1261

help(net.adaptFcn)

net.adaptFcn

myNet.adaptFcn

net.biases{i}.learnParam

myNet.biases{i}.learnParam

myNet.biases.learnParam

myNet.biases.learnParam.lr

myNet.biases.learnParam.lr={{[0.1]},{[0.1]},{[0.1]},{[0.1]},{[0.1]}}

{{[0.1]},{[0.1]},{[0.1]},{[0.1]},{[0.1]}}

{{[0.1]};{[0.1]};{[0.1]};{[0.1]};{[0.1]}}

{[0.1];[0.1];[0.1];[0.1];[0.1]}

myNet.biases.learnParam.lr= {[0.1];[0.1];[0.1];[0.1];[0.1]}

myNet.biases{1}.learnParam.lr= 0.1

Test1261

load('data.mat')

Test1261

load('6R3\_1\_0\_0\_0.mat')

myNet=net

resB11=myNet(resM');

load('data.mat')

load('6R3\_0.5\_0\_0\_0.mat')

resB1=myNet(resM');

resB2=round(resB1)

sum(sum(resB1'==resB))

sum(sum(resB2'==resB))

resB3=abs(resB'-resB2)/125

resB3=abs(resB-resB2')/125

resB11=sum(resB')

resB12=sum(resB1')

resB13=abs(resB11-resB12)/125

resB12=sum(resB1)

resB13=abs(resB11-resB12)/125

figure

scatter(1:1000,resB13,5)

scatter(1:1000,resB13,5,'filled')

resB13=abs(resB1-resB')

for l=1:125

end

sth=[]

for l=1:125

sth=vertcat(sth,resB13(l,:))

end

sth=[]

for l=1:125

Test1261

sth=horzcat(sth,resB13(l,:));

sth=[]

sth=horzcat(sth,resB13(l,:));

end

sth=[]

for l=1:125

sth=horzcat(sth,resB13(l,:));

end

scatter(1:125000,sth,5,'filled')

scatter(1:125000,sth,'filled')

scatter(1:125000,sth,1,'filled')

sum(sth>0.5)

%-- 1/27/2018 10:19 AM --%

Test1261

load('6R3\_0.5\_0\_0\_0.mat')

net(resM)

net(resM')

ptValid

sum(sum(resB1'==resB))

sum(sum(resB'==roundedNetData))

ans/(1000\*125)

sth=[]

resB13=abs(rawNetData-resB')

for l=1:125

sth=horzcat(sth,resB13(l,:));

end

scatter(1:125000,sth,1,'filled')

load('data.mat')

4e3\*2e3

Test1261

load('6R3\_0.5\_0\_0\_0.mat')

ptValid

sum(sum(resB'==roundedNetData))

sum(and(roundedNetData==1,resB'==1))/sum(roundedNetData==1)

sum(and(roundedNetData==1,resB'==1))

sum(and(roundedNetData==resB',roundedNetData==1))/sum(roundedNetData==1)

sum(and(roundedNetData==resB',roundedNetData==1))

Test1261

sum(and(roundedNetData==1,resB'==1))

and(roundedNetData==1,resB'==1)

roundedNetData==1

load('6R3\_0.5\_0\_0\_0.mat')

ptValid

sum(and(roundedNetData==1,resB'==1))

sum(and(roundedNetData==1,resB==1))

sum(and(roundedNetData==1,resB==1))/sum(roundedNetData==1)

sum(and(linearForm==1,linearOriginal==1))/sum(linearForm==1)

sum(and(linearForm==1,linearOriginal==1))

linearForm==1

sum(linearForm==1)

sum(sum(resB==1))

net

clear all

load('12718-1.mat')

load('6R3\_0.5\_0\_0\_0.mat')

ptValid

sum(linearOriginal)

sum(linearForm)

ptValid

load('6R3\_0.5\_0\_0\_0.mat')

ptValid

sum(linearForm)

sum(and(linearForm==1,linearOriginal==1))

sum(and(roundedNetData==1,resB==1))/sum(roundedNetData==1)

ptValid

sum(linearForm)

sum(linearForm==linearOriginal)

ptValid

sum(linearForm==linearOriginal)

load('data.mat')

ANN

ptValid

load('6R3\_0.5\_0\_0\_0.mat')

ptValid

sum(and(roundedNetData==1,resB==1))/sum(roundedNetData==1)

sum(linearForm==linearOriginal)

clear all

load('6R3\_0.5\_0\_0\_0.mat')

load('data.mat')

ANN

load('6R3\_0.5\_0\_0\_0.mat')

ptValid

sum(linearForm==linearOriginal)

sum(and(roundedNetData==1,resB==1))/sum(roundedNetData==1)

sum(and(roundedNetData==1,resB==1))/sum(resB==1)

2\*.72\*.44/(.72+.44)

sum(and(roundedNetData==1,resB==1)+and(roundedNetData==0,resB==0))

sum(sum(and(roundedNetData==1,resB==1)))/sum(sum(roundedNetData==1))

sum(sum(and(roundedNetData==1,resB==1)))

sum(sum(and(roundedNetData==1,resB==1)))/sum(sum(resB==1))

2\*.67\*.51/(.67+.51)

ANN

%-- 1/27/2018 1:20 PM --%

ANN

load('6R3\_0.5\_0\_0\_0.mat')

ptValid

sum(linearForm==linearOriginal)/125000

sum(sum(and(roundedNetData==1,resB==1)))/sum(sum(roundedNetData==1))

sum(linearForm==l)

linearForm==l

1

sum(linearForm==1)

ptValid

load('6R3\_0.5\_0\_0\_0.mat')

ptValid

ptValid

load('6R3\_0.5\_0\_0\_0.mat')

ptValid

precision

ptValid

load('6R3\_0.5\_0\_0\_0.mat')

ptValid

load('6R3\_0.5\_0\_0\_0.mat')

ptValid

precision=precision/sum(linearForm==1)

precision=precision/sum(linearOriginal==1)

ptValid

load('6R3\_0.5\_0\_0\_0.mat')

ptValid

prec=precision/sum(linearForm==1)

rec=precision/sum(linearOriginal==1)

%-- 1/27/2018 1:46 PM --%

Test1271

%-- 1/27/2018 1:55 PM --%

Test1271

load('test.mat')

ptValid

sum(linearForm==linearOriginal)/27000

sum(sum(and(roundedNetData==1,resB==1)))/sum(sum(roundedNetData==1))

sum(sum(and(roundedNetData==1,resB==1)))/sum(sum(rawNetData==1))

sum(sum(and(roundedNetData==1,resB==1)))/sum(sum(resB==1))

/sum(sum(resB==1))

10/sum(sum(resB==1))

sum(sum(resB==1))

sum(sum(and(roundedNetData==1)))/sum(sum(resB==1))

sum(sum(roundedNetData==1))/sum(sum(resB==1))

ptValid

load('test.mat')

ptValid

clear all

load('net.mat')

load('test.mat')

ptValid

scatter(1:27000,linearForm)

%-- 1/27/2018 2:12 PM --%

DataGeneration6DOFR3(1e4,[-1 1 -1 1 -1 1 1 1 1] ,[0 0 0])

load('net.mat')

load('test.mat')

ptValid

load('test.mat')

ptValid

Test1271

ptValid

Test1271

load('train.mat')

Test1271

ptValid

sum(linearForm==linearOriginal)

sum(linearForm==linearOriginal)/270000

for j=1:x

linearForm=horzcat(linearForm,roundedNetData(j,:));

linearOriginal=horzcat(linearOriginal,resB(j,:));

linearRaw=horzcat(linearForm,rawNetData(j,:));

end

clear linearForm linearOriginal linearRaw

for j=1:x

linearForm=horzcat(linearForm,roundedNetData(j,:));

linearOriginal=horzcat(linearOriginal,resB(j,:));

linearRaw=horzcat(linearForm,rawNetData(j,:));

end

linearForm=[];

linearOriginal=[];

linearRaw=[];

[x,y]=size(roundedNetData);

resB=resB;

for j=1:x

linearForm=horzcat(linearForm,roundedNetData(j,:));

linearOriginal=horzcat(linearOriginal,resB(j,:));

linearRaw=horzcat(linearForm,rawNetData(j,:));

end

linearForm=[];

linearOriginal=[];

linearRaw=[];

[x,y]=size(roundedNetData);

resB=resB;

for j=1:x

linearForm=horzcat(linearForm,roundedNetData(j,:));

linearOriginal=horzcat(linearOriginal,resB(j,:));

linearRaw=horzcat(linearRaw,rawNetData(j,:));

end

absoluteError=abs(linearRaw-linearOriginal);

scater(1:270000,absoluteError,'filled')

scatter(1:270000,absoluteError,'filled')

scatter(1:270000,absoluteError,1,'filled')

clear all

load('train.mat')

Test1271

dataSample(resM,2)

datasample(resM,2)

datasample(resM',5)'

Test1271

resM=resM';

resB=resB';

Test1272

Test1273

Test1272

clear resB resM

Test1272

gpuDevice(1)

tr{1}

a=finalTr{1}

b=finalTr{2}

c=finalTr{3}

d=finalTr{4}

a.time

struct(tr.perf,tr.vperf,tr.tperf,tr.gradient)

struct({tr.perf,tr.vperf,tr.tperf,tr.gradient})

tr=a

struct(tr.perf,tr.vperf,tr.tperf,tr.gradient)

struct({tr.perf,tr.vperf,tr.tperf,tr.gradient})

tr.perf

struct({tr.perf;tr.vperf;tr.tperf;tr.gradient})

struct(tr.perf;tr.vperf;tr.tperf;tr.gradient)

finalTr{i}{tr.perf;tr.vperf;tr.tperf;tr.gradient}

finalTr{i}={tr.perf;tr.vperf;tr.tperf;tr.gradient}

tr=a

finalTr{1}={tr.perf;tr.vperf;tr.tperf;tr.gradient}

tr=b

finalTr{2}={tr.perf;tr.vperf;tr.tperf;tr.gradient}

tr=c

finalTr{3}={tr.perf;tr.vperf;tr.tperf;tr.gradient}

tr=d

finalTr{4}={tr.perf;tr.vperf;tr.tperf;tr.gradient}

finalTr{5}=''

for kk=1:4

end

array=[]

for kk=1:4

array=horzcat(array,finalTr{kk}.perf);

end

finalTr{1}

for kk=1:4

array=horzcat(array,finalTr{kk}(1));

end

finalTr{kk}(1)

finalTr{kk}.1

for kk=1:4

array=horzcat(array,cell2mat(finalTr{kk}(1)));

end

clear all

net = feedforwardnet([100 50 50 50 50 50 50 100],'trainscg');

net

net.trainParam

net.trainParam.max\_fail=12

Test1271

%-- 1/27/2018 7:12 PM --%

Test1271

load('test.mat')

ptValid

clear linearForm linearOriginal linearRaw

ptValid

figure

scatter(1:se,absoluteError,1,'filled')

sum(absoluteError>0.5)

ptValid

scatter(1:se,absoluteError,1,'filled')

sum(absoluteError>0.5)

ptValid

scatter(1:se,absoluteError,1,'filled')

save('12718train.mat')

perf=[]

perf=vertcat(perf,finalTr{1}(1))

perf=[]

perf=vertcat(perf,cell2mat(finalTr{1}(1)))

perf=vertcat(perf,cell2mat(finalTr{2}(1)))

perf=[]

perf=hozcat(perf,cell2mat(finalTr{1}(1)))

perf=horzcat(perf,cell2mat(finalTr{1}(1)))

perf=horzcat(perf,cell2mat(finalTr{2}(1)))

perf=horzcat(perf,cell2mat(finalTr{3}(1)))

plot(1:153,perf)

semilogy(1:153,perf)

clear all

load('train27.mat')

Hahaha

for i=1:10

for j=1:10

if isNaN(z(i,j))

z(i,j)==0

end

end

end

for i=1:10

for j=1:10

if isnan(z(i,j))

z(i,j)==0

end

end

end

isnan(z(10,9))

isnan(z(10,10))

for i=1:10

for j=1:10

if isnan(z(i,j))

z(i,j)=0

end

end

end

mesh(1:10,1:10,z)

10:50:200

10:50:260

Hahaha

600:-50:0

Hahaha

resB1=resB

load('test27.mat')

resB1=resB;

resM1=resM;

100:-5:50

Hahaha

clear all

Test1271

gpu1 = gpuDevice(1)

load train

%resM=resM';

%resB=resB';

bSize=2.5e4;

bNum=30;

%{

for i=1:bNum

sample1=datasample(resM,bSize)';

sample2=datasample(resB,bSize)';

save(strcat('t',num2str(i),'.mat'),'sample1','sample2')

end

%}

clear resB resM

net = feedforwardnet([100 50 50 50 50 50 50 100],'trainscg');

net.trainParam.epochs = 50;

net.trainParam.max\_fail=12;

net.output.processFcns={'fixunknowns'}

net.input.processFcns={'mapminmax'}

net.performFcn='mse'

for i=1:bNum

name=strcat('t',num2str(i),'.mat');

load(name)

[net,tr] = train(net,sample1,sample2);

finalTr{i}={tr.perf;tr.vperf;tr.tperf;tr.gradient};

end

ptValid

gpu1 = gpuDevice(1)

load train

%resM=resM';

%resB=resB';

bSize=2.5e4;

bNum=30;

%{

for i=1:bNum

sample1=datasample(resM,bSize)';

sample2=datasample(resB,bSize)';

save(strcat('t',num2str(i),'.mat'),'sample1','sample2')

end

%}

clear resB resM

net = feedforwardnet([100 50 50 50 50 50 50 100],'trainscg');

net.trainParam.epochs = 50;

net.trainParam.max\_fail=12;

net.output.processFcns={'fixunknowns'}

net.input.processFcns={'mapminmax'}

net.performFcn='mse'

for i=1:bNum

name=strcat('t',num2str(i),'.mat');

load(name)

[net,tr] = train(net,sample1,sample2);

finalTr{i}={tr.perf;tr.vperf;tr.tperf;tr.gradient};

end

Untitled3

%-- 1/28/2018 1:23 PM --%

load('t47.mat')

load('train.mat')

Untitled3

net = feedforwardnet([100 50 50 50 50 50 50 100],'trainscg');

net.trainParam.epochs = 10;

net.trainParam.max\_fail=12;

net.output.processFcns={'fixunknowns'}

net.input.processFcns={'mapminmax'}

net.performFcn='mse'

clear resB resM

[net,tr] = train(net,sample1,sample2,'useGPU','yes');

gpuDevice()

net = feedforwardnet([100 50 50 50 50 100],'trainscg');

net.trainParam.epochs = 10;

net.trainParam.max\_fail=12;

net.output.processFcns={'fixunknowns'}

net.input.processFcns={'mapminmax'}

net.performFcn='mse'

for i=1:bNum

name=strcat('t',num2str(i),'.mat');

load(name)

[net,tr] = train(net,sample1,sample2);

finalTr{i}={tr.perf;tr.vperf;tr.tperf;tr.gradient};

end

net = feedforwardnet([100 50 50 50 50 100],'trainscg');

net.trainParam.epochs = 10;

net.trainParam.max\_fail=12;

net.output.processFcns={'fixunknowns'}

net.input.processFcns={'mapminmax'}

net.performFcn='mse'

[net,tr] = train(net,sample1,sample2);

[net,tr] = train(net,sample1,sample2,'useGPU','yes');

clear gpu1 net

gpuDevice(1)

net = feedforwardnet([100 50 50 50 50 100],'trainscg');

net.trainParam.epochs = 10;

net.trainParam.max\_fail=12;

net.output.processFcns={'fixunknowns'}

net.input.processFcns={'mapminmax'}

net.performFcn='mse'

[net,tr] = train(net,sample1,sample2,'useGPU','yes');

a=gpuArray(sample1)

b=gpuArray(sample2)

clear sample1 sample2

[net,tr] = train(net,a,b,'useGPU','yes');

a=a(:,1:10000)

b=b(:,1:10000)

[net,tr] = train(net,a,b,'useGPU','yes');

a=a(:,1:5000)

b=b(:,1:5000)

[net,tr] = train(net,a,b,'useGPU','yes');

gpuDevice(1)

[net,tr] = train(net,a,b,'useGPU','yes');

load('t50.mat')

a=gpuArray(sample1)

b=gpuArray(sample2)

clear sample1 sample2

a=a(:,1:5000)

b=b(:,1:5000)

b=b(:,1:1000)

[net,tr] = train(net,a,b,'useGPU','yes');

a=a(:,1:1000)

[net,tr] = train(net,a,b,'useGPU','yes');

gputest

[net,tr] = train(net,a,b,'useGPU','yes');

gputest

[net,tr] = train(net,a,b,'useGPU','yes');

gputest

[net,tr] = train(net,a,b,'useGPU','yes');

gputest

[net,tr] = train(net,a,b,'useGPU','yes');

gputest

[net,tr] = train(net,a,b,'useGPU','yes');

Untitled3

for i=1:bNum

name=strcat('t',num2str(i),'.mat');

load(name)

[net,tr] = train(net,a,b,'useGPU','yes');

finalTr{i}={tr.perf;tr.vperf;tr.tperf;tr.gradient};

end

ptValid

net.biases{i}.learnParam.lr

net.biases{i}.learnParam

net.biases{1}.learnParam.lr

clear all

Untitled3

1.3e5/2.5e3

Untitled3

2500\*52

Untitled3

bNum=51

for l=1:10

%{

lr=0.8;

for i=1:8

net.biases{i}.learnParam.lr=lr;

net.layerweights{i}.learnParam.lr=lr;

end

%}

for i=1:bNum

%{

if (i<45)

for j=1:8

net.biases{j}.learnParam.lr=(1-(i/45))\*lr+(i/45)\*.01\*lr;

net.layerweights{j}.learnParam.lr=(1-(i/45))\*lr+(i/45)\*.01\*lr;

end

end

%}

name=strcat('t',num2str(i),'.mat');

load(name)

[net,tr] = train(net,a,b,'useGPU','yes');

finalTr{i}={tr.perf;tr.vperf;tr.tperf;tr.gradient};

end

l

end

Untitled3

clear all

Untitled3

%-- 1/28/2018 4:20 PM --%

Untitled3

for l=1:3

for i=1:5

net.biases{i}.learnParam.lr=lr;

net.layerweights{i}.learnParam.lr=lr;

end

%}

for i=1:bNum

if and(i<30,l==1)

for j=1:5

net.biases{j}.learnParam.lr=(1-(i/30))\*lr+(i/30)\*.01\*lr;

net.layerweights{j}.learnParam.lr=(1-(i/30))\*lr+(i/30)\*.01\*lr;

end

end

name=strcat('t',num2str(i),'.mat');

load(name)

[net,tr] = train(net,a,b,'useGPU','yes');

finalTr{i}={tr.perf;tr.vperf;tr.tperf;tr.gradient};

end

l

end

Test1271

Test12712

for i=1:bNum

name=strcat('t',num2str(i),'.mat');

load(name)

[net,tr] = train(net,sample1,sample2);

finalTr{i}={tr.perf;tr.vperf;tr.tperf;tr.gradient};

end

Test12712

clear finalTr

Test12712

clear all

Test12712

load('t1.mat')

b

Test12712

[net,tr] = train(net,a(1:70000),b(1:70000);

finalTr{i}={tr.perf;tr.vperf;tr.tperf;tr.gradient};

[net,tr] = train(net,a(1:70000),b(1:70000));

finalTr{i}={tr.perf;tr.vperf;tr.tperf;tr.gradient};

[net,tr] = train(net,a(:,1:70000),b(:,1:70000));

finalTr{i}={tr.perf;tr.vperf;tr.tperf;tr.gradient};

net = feedforwardnet([100 50 50 50 50 50 50 100],'trainscg');

net.trainParam.epochs = 750;

net.trainParam.max\_fail=12;

net.output.processFcns={'fixunknowns'}

net.input.processFcns={'fixunknowns'}

net.performFcn='mae'

[net,tr] = train(net,a(:,1:70000),b(:,1:70000));

finalTr{i}={tr.perf;tr.vperf;tr.tperf;tr.gradient};

Test12712

clear all

Test12712

for i=2:bNum

name=strcat('t',num2str(i),'.mat');

load(name)

[net,tr] = train(net,a,b);

finalTr{i}={tr.perf;tr.vperf;tr.tperf;tr.gradient};

end

load('t2.mat')

[net,tr] = train(net,a,b);

finalTr{i}={tr.perf;tr.vperf;tr.tperf;tr.gradient};

[net,tr] = train(net,a(:,1:30000),b(:,1:30000));

finalTr{i}={tr.perf;tr.vperf;tr.tperf;tr.gradient};

load('t3.mat')

[net,tr] = train(net,a(:,1:30000),b(:,1:30000));

finalTr{i}={tr.perf;tr.vperf;tr.tperf;tr.gradient};

load('t1.mat')

[net,tr] = train(net,a(:,1:30000),b(:,1:30000));

finalTr{i}={tr.perf;tr.vperf;tr.tperf;tr.gradient};

load('t2.mat')

[net,tr] = train(net,a(:,1:30000),b(:,1:30000));

finalTr{i}={tr.perf;tr.vperf;tr.tperf;tr.gradient};

load('t3.mat')

[net,tr] = train(net,a(:,1:30000),b(:,1:30000));

finalTr{i}={tr.perf;tr.vperf;tr.tperf;tr.gradient};

load('t1.mat')

a=finalTr{1}(4)

a=cell2mat(a)

a=horzcat(a,cell2mat(finalTr{2}(1)))

plot(1:251,a)

plot(1:502,a)

clear all

sthDatWorks

a=finalTr{1}(4)

a=cell2mat(a)

a=horzcat(a,cell2mat(finalTr{2}(1)))

plot(1:502,a)

a=horzcat(a,cell2mat(finalTr{3}(1)))

plot(1:753,a)

j='haha'

load('IMPORTANT.mat')

%-- 1/30/2018 4:02 PM --%

load('REALLYIMPORTANT1.123.mat')

ct=4

for l=1:4

for i=1:3

name=strcat('t',num2str(i),'.mat');

load(name)

[net,tr] = train(net,a(:,1:30000),b(:,1:30000));

finalTr{ct}={tr.perf;tr.vperf;tr.tperf;tr.gradient};

ct=ct+1;

end

l

end

ptValid

scatter(1:se,absoluteError,1,'filled')

ptValid

plot(1:21,f\_final)

plot(0:0.05:1,f\_final)

ptValid

plot(0:0.025:1,f\_final)

plot(0:0.025:1,f\_final,'lineWidth',5)

plot(0:0.025:1,f\_final,'lineWidth',2.5)

xlabel('Fiter function threshold value')

xlabel('filter function threshold value')

ylabel('F-score')

title('Neural network accuracy after 1250 gradient updates')

scatter(1:9261000,absoluteError,1.5,'filled')

ylabel('absolute error')

title('Neural network accuracy: absolute error of every prediction in 10^4 samples')

title('Neural network accuracy: absolute error of every prediction in 10^4 samples after 1250 gradient updates')

title('absolute error of every prediction in 10^4 samples after 1250 gradient updates')

net.divideMode

net.divideParam

net.divideParam.trainRatio

net.divideParam.trainRatio=0.9;

net.divideParam.valRatio=0.05;

net.divideParam.testRatio=0.05;

for i=1:5

end

h=[]

j=[]

k=[]

l=[]

for i=1:5

l=horzcat(l,cell2mat(finalTr{i}(2))

for i=1:5

l=horzcat(l,cell2mat(finalTr{i}(2)))

end

plot(1:1255,l)

for i=1:5

l=horzcat(l,cell2mat(finalTr{i}(4)))

end

plot(1:1255,l)

l=[]

for i=1:5

l=horzcat(l,cell2mat(finalTr{i}(4)))

end

plot(1:1255,l)

plot(1:1255,l,'lineWidth',2.5)

plot(1:1255,l,'lineWidth',2)

xlabel('gradient updates')

ylabel('gradient')

clear a absoluteError b linearForm linearOriginal linearRaw

clear roundedNetData

ct=6

i=3

name=strcat('t',num2str(i),'.mat');

load(name)

[net,tr] = train(net,a(:,1:30000),b(:,1:30000));

finalTr{ct}={tr.perf;tr.vperf;tr.tperf;tr.gradient};

ct=ct+1;

%}

for l=1:4

for i=1:3

name=strcat('t',num2str(i),'.mat');

load(name)

[net,tr] = train(net,a(:,1:30000),b(:,1:30000));

finalTr{ct}={tr.perf;tr.vperf;tr.tperf;tr.gradient};

ct=ct+1;

end

l

end

clear rawNetData resB resM

clear tr

ct=6

i=3

name=strcat('t',num2str(i),'.mat');

load(name)

[net,tr] = train(net,a(:,1:30000),b(:,1:30000));

finalTr{ct}={tr.perf;tr.vperf;tr.tperf;tr.gradient};

ct=ct+1;

%}

for l=1:4

for i=1:3

name=strcat('t',num2str(i),'.mat');

load(name)

[net,tr] = train(net,a(:,1:30000),b(:,1:30000));

finalTr{ct}={tr.perf;tr.vperf;tr.tperf;tr.gradient};

ct=ct+1;

end

l

end

ptValid

plot(0:0.025:1,f\_final,'lineWidth',2.5)

max(f\_score)

max(f\_final)

l=[]

for i=1:15

l=horzcat(l,cell2mat(finalTr{i}(4)))

end

plot(1:3765,l)

semilogy(1:3765,l)

l2=[]

for i=1:15

l2=horzcat(l,cell2mat(finalTr{i}(1)))

end

semilogy(1:3765,l2)

semilogy(1:4016,l2)

gg=[]

for i=1:15

gg=horzcat(gg,cell2mat(finalTr{i}(1)))

end

semilogy(1:3765,gg)

plot(1:3765,gg)

scatter(1:9261000,absoluteError,1.5,'filled')

158250

15\*250

plot(1:size(gg),gg,'lineWidth',2)

plot(size(gg),gg,'lineWidth',2)

plot(size(gg)',gg,'lineWidth',2)

size(gg)

plot(1:size(gg)',gg,'lineWidth',2)

1:size(gg)'

size(gg)'

1:size(gg)(2)'

1:size(gg)'(2)

1:size(gg)(1,2)

1:(size(gg)(1,2))

1:(size(gg)[1])

1:max(size(gg))

plot(1:max(size(gg)),gg,'lineWidth',2)

scatter(1:9261000,absoluteError,1.5,'filled')

figure

scatter(1:9261000,absoluteError,1.5,'filled')

ylabel('absolute error')

title('Neural network accuracy: absolute error of every prediction in 10^4 samples')

title('Neural network accuracy: absolute error of every prediction in 10^4 samples after 1250 gradient updates')

title('absolute error of every prediction in 10^4 samples after 3750 gradient updates')

scatter(1:9261000,absoluteError,1.5,'filled')

title('absolute error of every prediction in 10^4 samples after 3750 gradient updates')

clear a absoluteError b linearForm linearOriginal linearRaw

clear all

stoHahaha

load('t76.mat')

datasample(resM',bSize)'

resM=resM'

resB=resB';

datasample(resM,bSize)

for i=1:bNum

sample1=datasample(resM,bSize)';

sample2=datasample(resB,bSize)';

a=gpuArray(sample1);

b=gpuArray(sample2);

save(strcat('t',num2str(i),'.mat'),'a','b')

%ct=ct+bSize;

end

gpu1 = gpuDevice(1)

clear resB resM sample1 sample2

net = feedforwardnet([100 50 50 50 50 50 50 100],'trainscg');

net.trainParam.epochs = 1;

net.output.processFcns={'fixunknowns'}

net.input.processFcns={'fixunknowns'}

net.performFcn='mae'

lr=0.8;

finalTr=zeros(bNum,4);

%for l=1:3

for i=1:8

net.biases{i}.learnParam.lr=lr;

net.layerweights{i}.learnParam.lr=lr;

end

%}

for i=1:bNum

if and(i<30,l==1)

for j=1:8

net.biases{j}.learnParam.lr=(1-(i/stopE))\*lr+(i/stopE)\*.01\*lr;

net.layerweights{j}.learnParam.lr=(1-(i/stopE))\*lr+(i/stopE)\*.01\*lr;

end

end

name=strcat('t',num2str(i),'.mat');

load(name)

[net,tr] = train(net,a,b,'useGPU','yes');

finalTr(i,:)=[tr.perf;tr.vperf;tr.tperf;tr.gradient];

end

gpu1 = gpuDevice(1)

clear resB resM sample1 sample2

net = feedforwardnet([100 50 50 50 50 50 50 100],'trainscg');

net.trainParam.epochs = 1;

net.output.processFcns={'fixunknowns'}

net.input.processFcns={'fixunknowns'}

net.performFcn='mae'

lr=0.8;

finalTr=zeros(bNum,4);

%for l=1:3

for i=1:8

net.biases{i}.learnParam.lr=lr;

net.layerweights{i}.learnParam.lr=lr;

end

%}

for i=1:bNum

if and(i<30)

for j=1:8

net.biases{j}.learnParam.lr=(1-(i/stopE))\*lr+(i/stopE)\*.01\*lr;

net.layerweights{j}.learnParam.lr=(1-(i/stopE))\*lr+(i/stopE)\*.01\*lr;

end

end

name=strcat('t',num2str(i),'.mat');

load(name)

[net,tr] = train(net,a,b,'useGPU','yes');

finalTr(i,:)=[tr.perf;tr.vperf;tr.tperf;tr.gradient];

end

gpu1 = gpuDevice(1)

clear resB resM sample1 sample2

net = feedforwardnet([100 50 50 50 50 50 50 100],'trainscg');

net.trainParam.epochs = 1;

net.output.processFcns={'fixunknowns'}

net.input.processFcns={'fixunknowns'}

net.performFcn='mae'

lr=0.8;

finalTr=zeros(bNum,4);

%for l=1:3

for i=1:8

net.biases{i}.learnParam.lr=lr;

net.layerweights{i}.learnParam.lr=lr;

end

%}

for i=1:bNum

if (i<30)

for j=1:8

net.biases{j}.learnParam.lr=(1-(i/stopE))\*lr+(i/stopE)\*.01\*lr;

net.layerweights{j}.learnParam.lr=(1-(i/stopE))\*lr+(i/stopE)\*.01\*lr;

end

end

name=strcat('t',num2str(i),'.mat');

load(name)

[net,tr] = train(net,a,b,'useGPU','yes');

finalTr(i,:)=[tr.perf;tr.vperf;tr.tperf;tr.gradient];

end

gpu1 = gpuDevice(1)

clear resB resM sample1 sample2

net = feedforwardnet([100 50 50 50 50 50 50 100],'trainscg');

net.trainParam.epochs = 1;

net.output.processFcns={'fixunknowns'}

net.input.processFcns={'fixunknowns'}

net.performFcn='mae'

lr=0.8;

finalTr=zeros(bNum,4);

%for l=1:3

for i=1:8

net.biases{i}.learnParam.lr=lr;

net.layerweights{i}.learnParam.lr=lr;

end

%}

for i=1:bNum

if (i<30)

for j=1:8

net.biases{j}.learnParam.lr=(1-(i/stopE))\*lr+(i/stopE)\*.01\*lr;

net.layerweights{j}.learnParam.lr=(1-(i/stopE))\*lr+(i/stopE)\*.01\*lr;

end

end

name=strcat('t',num2str(i),'.mat');

load(name)

[net,tr] = train(net,a,b,'useGPU','yes');

finalTr(i,:)=[tr.perf,tr.vperf,tr.tperf,tr.gradient];

end

finalTr(i,:)

[tr.perf,tr.vperf,tr.tperf,tr.gradient]

gpu1 = gpuDevice(1)

clear resB resM sample1 sample2

net = feedforwardnet([100 50 50 50 50 50 50 100],'trainscg');

net.trainParam.epochs = 1;

net.output.processFcns={'fixunknowns'}

net.input.processFcns={'fixunknowns'}

net.performFcn='mae'

lr=0.8;

finalTr=zeros(bNum,4);

%for l=1:3

for i=1:8

net.biases{i}.learnParam.lr=lr;

net.layerweights{i}.learnParam.lr=lr;

end

%}

for i=1:bNum

if (i<30)

for j=1:8

net.biases{j}.learnParam.lr=(1-(i/stopE))\*lr+(i/stopE)\*.01\*lr;

net.layerweights{j}.learnParam.lr=(1-(i/stopE))\*lr+(i/stopE)\*.01\*lr;

end

end

name=strcat('t',num2str(i),'.mat');

load(name)

[net,tr] = train(net,a,b,'useGPU','yes');

finalTr(i,:)=[tr.perf(2),tr.vperf(2),tr.tperf(2),tr.gradient(2)];

end

plot(1:300,finalTr(:,4)')

plot(1:300,finalTr(:,1)')

stoHahaha

net

plot(1:800,finalTr(:,1)')

plot(1:500,finalTr(:,1)')

plot(1:500,finalTr(:,4)')

plot(1:500,finalTr(:,1)')

ptValid

plot(0:0.025:1,f\_final,'lineWidth',2.5)

scatter(1:9261000,absoluteError,1.5,'filled')

stoHahaha

clear resB resM sample1 sample2

clear a absoluteError b linearForm linearOriginal linearRaw

clear all

stoHahaha

ptValid

plot(0:0.025:1,f\_final,'lineWidth',2.5)

ptValid

plot(-1:0.05:1,f\_final,'lineWidth',2.5)

net.biases{1}

net.biases{1}.learnParam.lr

(1-(i/stopE))\*lr+(i/stopE)\*.01\*lr

i=300

(1-(i/stopE))\*lr+(i/stopE)\*.01\*lr

ZED\_Camera

mex(mexZed)

mex(mexZED)

ZED\_Camera

net = feedforwardnet([100 50 50 50 50 50 50 100],'trainscg');

net.trainParam.epochs = 1;

net.output.processFcns={'fixunknowns'}

net.input.processFcns={'fixunknowns'}

net.performFcn='mae'

lr=0.8;

finalTr=zeros(bNum,4);

%for l=1:3

for i=1:8

net.biases{i}.learnParam.lr=lr;

net.layerweights{i}.learnParam.lr=lr;

end

%}

for i=1:bNum

if (i<stopE)

for j=1:8

net.biases{j}.learnParam.lr=(1-(i/stopE))\*lr+(i/stopE)\*.01\*lr;

net.layerweights{j}.learnParam.lr=(1-(i/stopE))\*lr+(i/stopE)\*.01\*lr;

end

end

%{

name=strcat('t',num2str(i),'.mat');

load(name)

[net,tr] = train(net,a,b,'useGPU','yes');

finalTr(i,:)=[tr.perf(2),tr.vperf(2),tr.tperf(2),tr.gradient(2)];

%}

end

bNum=500

net = feedforwardnet([100 50 50 50 50 50 50 100],'trainscg');

net.trainParam.epochs = 1;

net.output.processFcns={'fixunknowns'}

net.input.processFcns={'fixunknowns'}

net.performFcn='mae'

lr=0.8;

finalTr=zeros(bNum,4);

%for l=1:3

for i=1:8

net.biases{i}.learnParam.lr=lr;

net.layerweights{i}.learnParam.lr=lr;

end

%}

for i=1:bNum

if (i<stopE)

for j=1:8

net.biases{j}.learnParam.lr=(1-(i/stopE))\*lr+(i/stopE)\*.01\*lr;

net.layerweights{j}.learnParam.lr=(1-(i/stopE))\*lr+(i/stopE)\*.01\*lr;

end

end

%{

name=strcat('t',num2str(i),'.mat');

load(name)

[net,tr] = train(net,a,b,'useGPU','yes');

finalTr(i,:)=[tr.perf(2),tr.vperf(2),tr.tperf(2),tr.gradient(2)];

%}

end

stopE=300

net = feedforwardnet([100 50 50 50 50 50 50 100],'trainscg');

net.trainParam.epochs = 1;

net.output.processFcns={'fixunknowns'}

net.input.processFcns={'fixunknowns'}

net.performFcn='mae'

lr=0.8;

finalTr=zeros(bNum,4);

%for l=1:3

for i=1:8

net.biases{i}.learnParam.lr=lr;

net.layerweights{i}.learnParam.lr=lr;

end

%}

for i=1:bNum

if (i<stopE)

for j=1:8

net.biases{j}.learnParam.lr=(1-(i/stopE))\*lr+(i/stopE)\*.01\*lr;

net.layerweights{j}.learnParam.lr=(1-(i/stopE))\*lr+(i/stopE)\*.01\*lr;

end

end

%{

name=strcat('t',num2str(i),'.mat');

load(name)

[net,tr] = train(net,a,b,'useGPU','yes');

finalTr(i,:)=[tr.perf(2),tr.vperf(2),tr.tperf(2),tr.gradient(2)];

%}

end

net.biases.learnParam.lr

net = feedforwardnet([100 50 50 50 50 50 50 100],'trainscg');

net.biases.learnParam.lr

net.wights.learnParam.lr

net.weights.learnParam.lr

net.weight.learnParam.lr

net.layerweight.learnParam.lr

net.layerweights.learnParam.lr

net.layerweights{1}.learnParam.lr

net.layerweights{1}

net.layerweights{1}.learnParam.lr

net.layerweights{1}

init(net)

net.layerweights{1}.learnParam.lr

net.layerweights{1}

load('t4995.mat')

[net,tr] = train(net,a,b,'useGPU','yes')

net.output.processFcns={'fixunknowns'}

net.input.processFcns={'fixunknowns'}

[net,tr] = train(net,a,b,'useGPU','yes')

net.layerweights{1}

net.layerweights{1}.learnParam.lr

net.layerweights{1,1}.learnParam.lr

clear all

stoHahaha

net.layerWeights

net.layerWeights{1}

net.layerWeights{1,4}

net.layerWeights{1,2}

net.layerWeights{1,9}

net.layerWeights.learnParam

net.layerWeights.learnParam.lr

net.trainParam

net.trainParam.lr

net.trainParam

clear alll

clear all

net = feedforwardnet([100 50 50 50 50 50 50 100],'trainscg');

net.learnParam

net.trainParam

net.trainParam.lr

net.trainParam.lr=1

clear all

mod(2,1)

mod(7,3)

plotD=[]

1:max(size([1,2;3,4]))

stoHahaha

net.trainParam.lr

stoHahaha

clear all

Ha

ptValid

plot(-1:0.05:1,f\_final,'lineWidth',2.5)

scatter(1:125000,absoluteError,1.5,'filled')

sum(absoluteError>0.5)

ans/125000

[net,tr] = train(net,resM',resB','useParallel','yes');

load('train.mat')

[net,tr] = train(net,resM',resB','useParallel','yes');

Ha

ptValid

plot(-1:0.05:1,f\_final,'lineWidth',2.5)

net.trainParam.epochs = 68;

[net,tr] = train(net,resM',resB','useParallel','yes');

load('train.mat')

[net,tr] = train(net,resM',resB','useParallel','yes');

scatter(1:125000,absoluteError,1.5,'filled')

net.trainParam.epochs = 2500;

j

net.trainParam.epochs = 2500;

load('train.mat')

[net,tr] = train(net,resM',resB','useParallel','yes');

[net,tr] = train(net,resM',resB','useParallel','yes');

[net,tr] = train(net,resM',resB','useParallel','yes');

[net,tr] = train(net,resM',resB','useParallel','yes');

clear all

load('3.mat')

load('train.mat')

save('4.mat','net','tr')

[net,tr] = train(net,resM',resB','useParallel','yes');

save('4.mat','net','tr')

[net,tr] = train(net,resM',resB','useParallel','yes');

save('5.mat','net','tr')

[net,tr] = train(net,resM',resB','useParallel','yes');

save('6.mat','net','tr')

load('3.mat')

net.trainParam.epochs = 2500;

[net,tr] = train(net,resM',resB','useParallel','yes');

save('4.mat','net','tr')

[net,tr] = train(net,resM',resB','useParallel','yes');

save('5.mat','net','tr')

[net,tr] = train(net,resM',resB','useParallel','yes');

save('6.mat','net','tr')

ptValid

plot(-1:0.05:1,f\_final,'lineWidth',2.5)

scatter(1:125000,absoluteError,1.5,'filled')

load('C:\Users\Alexander Liao\OneDrive - Kent School\ISEF 2018 A. Liao A. Mao\Models\0.1Model\REALLYIMPORTANT1.131.mat')

clear all

gpuDevice(1)

net = feedforwardnet([100 50 50 50 50 50 50 100],'trainscg');

net.trainParam.epochs = 2500;

net.trainParam.max\_fail=6;

net.output.processFcns={'fixunknowns'}

net.input.processFcns={'fixunknowns'}

net.performFcn='mse'

load('C:\Users\Alexander Liao\OneDrive - Kent School\ISEF 2018 A. Liao A. Mao\Models\0.1Model\train.mat')

resB=resB(:,1:1323);

resB=resB';

resM=resM';

[net,tr] = train(net,resM',resB','useParallel','yes');

[net,tr] = train(net,resM,resB,'useParallel','yes');

net = feedforwardnet([100 50 50 50 50 50 50 100],'trainscg');

net.trainParam.epochs = 2500;

net.trainParam.max\_fail=6;

net.output.processFcns={'fixunknowns'}

net.input.processFcns={'fixunknowns'}

net.performFcn='mse'

[net,tr] = train(net,resM,resB);

tr

ptValid

net

net.inputs.size

net.inputs

net.inputs.weights

load train

resB=resB';

resM=resM';

resB=resB(1:1323,:);

Subspace1

%-- 2/1/2018 8:41 PM --%

Subspace1

save('subspace1.mat','net','tr')

save('subspace1.mat','net','tr','-v7.3')

ptValid

scatter(1:1323000,absoluteError,1.5,'filled')

Subspace1

clear all

Subspace1

ptValid

plot(-1:0.05:1,f\_final,'lineWidth',2.5)

scatter(1:1323000,absoluteError,1.5,'filled')

sum(absoluteError>0.5)

clear all

load('subspaceTr1.mat')

clear all

Subspace1

clear all

Subspace1

ptValid

plot(-1:0.05:1,f\_final,'lineWidth',2.5)

clear all

Subspace1

ptValid

net.inputs.size

clear all

Subspace1

ptValid

net

net.layerweights

%-- 2/4/2018 3:14 PM --%

Subspace0.5

Subspace05

%-- 2/4/2018 5:07 PM --%

Subspace05

ptValid

plot(-1:0.05:1,f\_final,'lineWidth',2.5)

net.trainParam.epochs = 100;

clear tr

load('FinalTr1.mat')

net.trainParam.epochs = 100;

load train

resB=resB';

resM=resM';

[net,tr] = train(net,resM,resB);

ptValid

plot

plot(-1:0.05:1,f\_final,'lineWidth',2.5)

scatter(1:1323000,absoluteError,1.5,'filled')

scatter(1:125000,absoluteError,1.5,'filled')

sum(absoluteError>0.5)

/125000

ans/125000

net.trainParam.epochs = 250;

[net,tr] = train(net,resM,resB);

clear all

load('FinalTr2.mat')

load train

resB=resB';

resM=resM';

net.trainParam.epochs = 250;

[net,tr] = train(net,resM,resB);

ptValid

plot(0:0.025:1,f\_final,'lineWidth',2.5)

scatter(1:125000,absoluteError,1.5,'filled')

sum(absoluteError>0.5)

clear all

load('FinalTr3.mat')

net.trainParam.epochs = 500;

[net,tr] = train(net,resM,resB);

[net,tr] = train(net,rem,resB);

load train

resB=resB';

resM=resM';

[net,tr] = train(net,resM,resB);

ptValid

plot(0:0.025:1,f\_final,'lineWidth',2.5)

scatter(1:125000,absoluteError,1.5,'filled')

sum(absoluteError>0.5)

RuntimeNet

rND=bR(rawNetData,0.5)

RuntimeNet

sum(rND)

sR=sum(rND)

sB=sum(resB)

abs(sB-sR)/125

sR=sum(rawNetData)

abs(sB-sR)/125

absSample=abs(sB-sR)/125

scatter(1:1000,absSample,2.5,'filled')

log=absSample>0.05

sum(log)

num=[]

for i=1:1000

if log(i)==1

num=horzcat(num,i)

end

end

Decoder6DOFR3

num=[]

for i=1:1000

if log(i)==1

num=horzcat(num,i)

end

end

Decoder6DOFR3

nume

stopPt

resM=resM'

Decoder6DOFR3

resM(11,:)

num

resM(23,:)

resM(43,:)

resM(153,:)

resM(978,:)

ZED\_Camera

load('FinalTr1.mat')

tr

perf1=perf

perf1=tr.perf

grad1=tr.perf

load('FinalTr2.mat')

perf2=tr.perf

grad2=tr.perf

load('FinalTr3.mat')

perf3=tr.perf

grad3=tr.perf

load('FinalTr4.mat')

perf5=tr.perf

perf4=tr.perf

grad4=tr.perf

grad=horzcat(grad1(1:300),grad2(1:100),grad3(1:250),grad4(1:500))

perf=horzcat(perf1(1:300),perf2(1:100),perf3(1:250),perf4(1:500))

plot(1:1150,grad)

%-- 2/5/2018 7:16 PM --%

load('FinalTr1.mat')

tr

perf1=perf

perf1=tr.perf

grad1=tr.perf

load('FinalTr2.mat')

perf2=tr.perf

grad2=tr.perf

load('FinalTr3.mat')

perf3=tr.perf

grad3=tr.perf

load('FinalTr4.mat')

perf5=tr.perf

perf4=tr.perf

grad4=tr.perf

grad=horzcat(grad1(1:300),grad2(1:100),grad3(1:250),grad4(1:500))

perf=horzcat(perf1(1:300),perf2(1:100),perf3(1:250),perf4(1:500))

plot(1:1150,grad)

load('FinalTr1.mat')

tr

perf1=perf

perf1=tr.perf

grad1=tr.perf

load('FinalTr2.mat')

perf2=tr.perf

grad2=tr.perf

load('FinalTr3.mat')

perf3=tr.perf

grad3=tr.perf

load('FinalTr4.mat')

perf5=tr.perf

perf4=tr.perf

grad4=tr.perf

grad=horzcat(grad1(1:300),grad2(1:100),grad3(1:250),grad4(1:500))

perf=horzcat(perf1(1:300),perf2(1:100),perf3(1:250),perf4(1:500))

plot(1:1150,grad)

semilogy(1:1150,grad)

semilogy(1:1150,grad,'lineWidth',2)

semilogy(1:1150,perf,'lineWidth',2)

semilogy(1:1150,grad,'lineWidth',2)

save('TrGrad1','grad','perf')

clear all

load('FinalTr4.mat')

RuntimeNet

load('test.mat')

RuntimeNet

profile RuntimeNet

profile Mout

profile o

profile on

RuntimeNet

profile('info')

profile on -timer 'real'

RuntimeNet

profile off

std(t)

s=std(t)

a=mean(t)

bar(s)

errorbar(a)

errorbar(a,s)

bar(1:3,s)

bar(s)

%-- 2/5/2018 7:41 PM --%

load('train.mat')

RuntimeNet

load('FinalTr4.mat')

RuntimeNet

load('test.mat')

RuntimeNet

testClas

RuntimeNet

classical(resM(i,:))

RuntimeNet

testClas

clear all

testClas

load('test.mat')

testClas

RuntimeNet

load('FinalTr4.mat')

RuntimeNet

load('test.mat')

load('t3.mat')

Timing1Model

load('REALLYIMPORTANT1.131.mat')

clear all

load('REALLYIMPORTANT1.131.mat')

load('test.mat')

Timing1Model

semilogy(1:sNum,t1,'lineWidth',2)

hold on

semilogy(1:sNum,t2,'lineWidth',2)

ZED\_Camera

make MEX=/Applications/MATLAB\_R2017a.app/bin/mex ARCH=maci64

make MEX=/Applications/MATLAB\_R2017a.app/bin/mex

mex -setup

ZED\_Camera

%-- 2/5/2018 8:39 PM --%

num2str(1)

Subspace1

save(strcat(num2str(i),'.mat'),'net','tr','-v7.3')

tr

perf=horzcat(perf,tr.perf);

grad=horzcat(grad,tr.gradient);

perf=[]

perf=horzcat(perf,tr.perf);

for i=2:5

[net,tr] = train(net,resM,resB);

save(strcat(num2str(i),'.mat'),'net','tr','-v7.3')

perf=horzcat(perf,tr.perf);

grad=horzcat(grad,tr.gradient);

end

%-- 2/6/2018 6:14 PM --%

Subspace1

load('1.mat')

clear tr

for i=2:5

[net,tr] = train(net,resM,resB);

save(strcat(num2str(i),'.mat'),'net','tr','-v7.3')

perf=horzcat(perf,tr.perf);

grad=horzcat(grad,tr.gradient);

end

RobotTest

clear all

%-- 2/6/2018 6:41 PM --%

load train

resB=resB';

resM=resM';

resB=resB(1:1323,:);

load('1.mat')

clear y tr Fs

net.inputs

net.inputSize

load train

resB=resB';

resM=resM';

resB=resB(1:1323,:);

for i=1:5

[net,tr] = train(net,resM,resB);

save(strcat(num2str(i),'.mat'),'net','tr','-v7.3')

perf=horzcat(perf,tr.perf);

grad=horzcat(grad,tr.gradient);

end

for i=2:5

[net,tr] = train(net,resM,resB);

save(strcat(num2str(i),'.mat'),'net','tr','-v7.3')

perf=horzcat(perf,tr.perf);

grad=horzcat(grad,tr.gradient);

end

i=3

[net,tr] = train(net,resM,resB);

save(strcat(num2str(i),'.mat'),'net','tr','-v7.3')

%-- 2/7/2018 1:13 PM --%

load('2.mat')

ptValid

plot(-1:0.05:1,f\_final,'lineWidth',2.5)

scatter(1:125000,absoluteError,1.5,'filled')

scatter(1:1323000,absoluteError,1.5,'filled')

sum(absoluteError>0.5)

clear all

load('2.mat')

net.trainParam.epochs=99;

for i=3:15

[net,tr] = train(net,resM,resB);

save(strcat(num2str(i),'.mat'),'net','tr','-v7.3')

end

clear tr

load train

resB=resB';

resM=resM';

resB=resB(1:1323,:);

for i=3:15

[net,tr] = train(net,resM,resB);

save(strcat(num2str(i),'.mat'),'net','tr','-v7.3')

end

clear all

%-- 2/5/2018 7:16 PM --%

load('FinalTr1.mat')

tr

perf1=perf

perf1=tr.perf

grad1=tr.perf

load('FinalTr2.mat')

perf2=tr.perf

grad2=tr.perf

load('FinalTr3.mat')

perf3=tr.perf

grad3=tr.perf

load('FinalTr4.mat')

perf5=tr.perf

perf4=tr.perf

grad4=tr.perf

grad=horzcat(grad1(1:300),grad2(1:100),grad3(1:250),grad4(1:500))

perf=horzcat(perf1(1:300),perf2(1:100),perf3(1:250),perf4(1:500))

plot(1:1150,grad)

load('FinalTr1.mat')

tr

perf1=perf

perf1=tr.perf

grad1=tr.perf

load('FinalTr2.mat')

perf2=tr.perf

grad2=tr.perf

load('FinalTr3.mat')

perf3=tr.perf

grad3=tr.perf

load('FinalTr4.mat')

perf5=tr.perf

perf4=tr.perf

grad4=tr.perf

grad=horzcat(grad1(1:300),grad2(1:100),grad3(1:250),grad4(1:500))

perf=horzcat(perf1(1:300),perf2(1:100),perf3(1:250),perf4(1:500))

plot(1:1150,grad)

semilogy(1:1150,grad)

semilogy(1:1150,grad,'lineWidth',2)

semilogy(1:1150,perf,'lineWidth',2)

semilogy(1:1150,grad,'lineWidth',2)

save('TrGrad1','grad','perf')

clear all

load('FinalTr4.mat')

RuntimeNet

load('test.mat')

RuntimeNet

profile RuntimeNet

profile Mout

profile o

profile on

RuntimeNet

profile('info')

profile on -timer 'real'

RuntimeNet

profile off

std(t)

s=std(t)

a=mean(t)

bar(s)

errorbar(a)

errorbar(a,s)

bar(1:3,s)

bar(s)

%-- 2/5/2018 7:41 PM --%

load('train.mat')

RuntimeNet

load('FinalTr4.mat')

RuntimeNet

load('test.mat')

RuntimeNet

testClas

RuntimeNet

classical(resM(i,:))

RuntimeNet

testClas

clear all

testClas

load('test.mat')

testClas

RuntimeNet

load('FinalTr4.mat')

RuntimeNet

load('test.mat')

load('t3.mat')

Timing1Model

load('REALLYIMPORTANT1.131.mat')

clear all

load('REALLYIMPORTANT1.131.mat')

load('test.mat')

Timing1Model

semilogy(1:sNum,t1,'lineWidth',2)

hold on

semilogy(1:sNum,t2,'lineWidth',2)

ZED\_Camera

make MEX=/Applications/MATLAB\_R2017a.app/bin/mex ARCH=maci64

make MEX=/Applications/MATLAB\_R2017a.app/bin/mex

mex -setup

ZED\_Camera

%-- 2/5/2018 8:39 PM --%

num2str(1)

Subspace1

save(strcat(num2str(i),'.mat'),'net','tr','-v7.3')

tr

perf=horzcat(perf,tr.perf);

grad=horzcat(grad,tr.gradient);

perf=[]

perf=horzcat(perf,tr.perf);

for i=2:5

[net,tr] = train(net,resM,resB);

save(strcat(num2str(i),'.mat'),'net','tr','-v7.3')

perf=horzcat(perf,tr.perf);

grad=horzcat(grad,tr.gradient);

end

%-- 2/6/2018 1:31 PM --%

ZED\_Camera

export LD\_PRELOAD=/usr/lib/x86\_64-linux-gnu/libstdc++.so.6:/usr/local/cuda-8.0/lib64/libcudart.so.8.0:/usr/local/cuda-8.0/lib64/libcublas.so.8.0:/usr/lib/x86\_64-linux-gnu/libprotobuf.so.9

ZED\_PointCloud

%-- 2/6/2018 2:12 PM --%

ZED\_PointCloud

%-- 2/6/2018 2:17 PM --%

ZED\_PointCloud

%-- 2/6/2018 2:21 PM --%

ZED\_PointCloud

%-- 2/6/2018 2:26 PM --%

ZED\_PointCloud

%-- 2/6/2018 2:34 PM --%

ZED\_PointCloud

ZED\_Camera

%-- 2/6/2018 4:25 PM --%

ZED\_Camera

ZED\_PointCloud

ZED\_Camera

ZED\_PointCloud

ZED\_Camera

mexZED(1)

ZED\_Camera

image\_depth(:,:,1)

ZED\_Camera

imshow(image\_depth)

imshow(image\_left)

%-- 2/6/2018 6:14 PM --%

Subspace1

load('1.mat')

clear tr

for i=2:5

[net,tr] = train(net,resM,resB);

save(strcat(num2str(i),'.mat'),'net','tr','-v7.3')

perf=horzcat(perf,tr.perf);

grad=horzcat(grad,tr.gradient);

end

RobotTest

clear all

%-- 2/6/2018 6:41 PM --%

load train

resB=resB';

resM=resM';

resB=resB(1:1323,:);

load('1.mat')

clear y tr Fs

net.inputs

net.inputSize

load train

resB=resB';

resM=resM';

resB=resB(1:1323,:);

for i=1:5

[net,tr] = train(net,resM,resB);

save(strcat(num2str(i),'.mat'),'net','tr','-v7.3')

perf=horzcat(perf,tr.perf);

grad=horzcat(grad,tr.gradient);

end

for i=2:5

[net,tr] = train(net,resM,resB);

save(strcat(num2str(i),'.mat'),'net','tr','-v7.3')

perf=horzcat(perf,tr.perf);

grad=horzcat(grad,tr.gradient);

end

i=3

[net,tr] = train(net,resM,resB);

save(strcat(num2str(i),'.mat'),'net','tr','-v7.3')

%-- 2/7/2018 1:13 PM --%

load('2.mat')

ptValid

plot(-1:0.05:1,f\_final,'lineWidth',2.5)

scatter(1:125000,absoluteError,1.5,'filled')

scatter(1:1323000,absoluteError,1.5,'filled')

sum(absoluteError>0.5)

clear all

load('2.mat')

net.trainParam.epochs=99;

for i=3:15

[net,tr] = train(net,resM,resB);

save(strcat(num2str(i),'.mat'),'net','tr','-v7.3')

end

clear tr

load train

resB=resB';

resM=resM';

resB=resB(1:1323,:);

for i=3:15

[net,tr] = train(net,resM,resB);

save(strcat(num2str(i),'.mat'),'net','tr','-v7.3')

end

%-- 2/7/2018 1:19 PM --%

1:1323

1324:1324+1322

1324:(1324+1322)

Untitled

clear all

Untitled

Untitled3

test27

scatter3(matrix(3,:),matrix(4,:),matrix(8,:),15,answer,'filled')

scatter3(matrix(3,:),matrix(4,:),matrix(8,:),35,answer,'filled')

test27

clear all

test27

clear all

test27

puma560

Test111

test27

scatter3(matrix(3,:),matrix(4,:),matrix(8,:),15,answer,'filled')

test27

JointSpaceUsage

Experiment26

load('maniplty.mat')

clear all

load('maniplty.mat')

p560fkine

clear all

load('5.mat')

ptValid

plot(-1:0.05:1,f\_final,'lineWidth',2.5)

ptValid

scatter(1:1323000,absoluteError,1.5,'filled')

Temporary

clear net i

clear tr

Subspace1

1e5

resB=resB(1:1323,1:1e5);

resM=resM(:,1:1e5);

Subspace1

resB=resB(1:1323,1:5e4);

resM=resM(:,1:5e4);

Subspace1

ptValid

plot(-1:0.05:1,f\_final,'lineWidth',2.5)

ptValid

scatter(1:1323000,absoluteError,1.5,'filled')

sum(absoluteError>0.5)

clear all

Subspace1

%-- 2/8/2018 6:51 PM --%

Subspace1

ptValid

Subspace1

ptValid

load('rp1.mat')

ptValid

plot(-1:0.1:1,f\_final,'lineWidth',2.5)

Subspace1

clear all

load('rp1.mat')

ptValid

scatter(1:1323000,absoluteError,1.5,'filled')

Subspace1

clear all

Subspace1

clear all

load('rp1.mat')

ptValid

plot(0:0.05:1,f\_final,'lineWidth',2.5)

1323\*3+1:1323\*4

clear all

gdX

gpuDevice(1)

net = feedforwardnet([150 150 150 150],'traingdx');

net.trainParam.epochs = 1999;

net.trainParam.max\_fail=30;

net.output.processFcns={'fixunknowns'}

net.input.processFcns={'fixunknowns'}

net.performFcn='mse'

perf=[];

grad=[];

[net,tr] = train(net,resM,resB,'useParallel','yes');

save(strcat(num2str(i),'.mat'),'net','tr','-v7.3')

clear all

Subspace1

ptValid

plot(0:0.05:1,f\_final,'lineWidth',2.5)

Subspace1

load('0+1i.mat')

ptValid

clear all

load('0+1i.mat')

ptValid

clear all

load('0+1i.mat')

p=tr.perf

plot(p)

semilogy(p)

net

net.numLayers

ptValid

scatter(1:1323000,absoluteError,1.5,'filled')

sum(absoluteError>0.5)

ptValid

sum(absoluteError>0.5)

scatter(1:1323000,absoluteError,1.5,'filled')

Decoder6DOFR3

scatter(1:1323000,absoluteError,1.5,'filled')

scatter(1:1323000,absoluteError,0.5,'filled')

clear all

%-- 2/9/2018 7:23 AM --%

load('1323\_3\_4\_subspace\_RP\_2500.mat')

net.layers

Subspace1

ptValid

plot(-1:0.1:1,f\_final,'lineWidth',2.5)

scatter(1:1323000,absoluteError,0.5,'filled')

Subspace1

clear all

Subspace1

ptValid

plot(-1:0.1:1,f\_final,'lineWidth',2.5)

Subspace1

clear all

Subspace1

%-- 2/12/2018 2:26 PM --%

plot([0.034 0.137 0.136],[6.67,108,107]）

plot([0.034 0.137 0.136],[6.67,108,107])

6.67\*e-4/0.034

6.67\*1e-4/0.034

ans\*0.233

1e-4

10^-4==1e-4

1.08^1e-2/0.137

(1.08^1e-2)/0.137

plot([0.034 0.137 0.136],[6.67,108,107]）

plot([0.034 0.137 0.136],[6.67,108,107])

fit([0.034 0.137 0.136],[6.67,108,107])

fitln([0.034 0.137 0.136],[6.67,108,107])

fitlm([0.034 0.137 0.136],[6.67,108,107])

polyfit([0.034 0.137 0.136],[6.67,108,107])

polyfit([0.034 0.137 0.136],[6.67,108,107],2)

（6.67\*1e-4）/0.034

(6.67\*1e-4)/0.034

6.67\*1e-4/(.034^2)

ans\*0.233

%-- 2/12/2018 2:39 PM --%

mdl\_puma560

p560.ikine(1)

DataGeneration6DOFR3(1)

data\_Gen\_6-DOF\_R3(1)

data\_Gen\_6\_DOF\_R3(1)

data\_Gen\_6-DOF\_R3

data\_Gen\_6\_DOF\_R3(1)

%-- 2/12/2018 4:08 PM --%

tb\_optparse

mdl\_puma560

p560.ikine6s(2)

seriallink(1)

SerialLink(1)

'R'

"R"

opt.type="6DOF";

opt.workspace="R^3";

opt.subspace=true;

opt.ikine="numeric";

opt.ilimit = 500;

opt.rlimit = 100;

opt.slimit = 100;

opt.tol = 1e-10;

opt.lambda = 0.1;

opt.lambdamin = 0;

opt.search = false;

opt.quiet = false;

opt.verbose = false;

opt.subspace

~1==1

"6DOF"=='6DOF'

transl([1,2,3])

transl(1,2,3)

[1,2,3](1)

a=[1 2 3]

a(1)

cell(1,3)

b=ans

b(1)

b(1)=1

b{1}=1

dataGen

dataGen(2,[-1 1 -1 1 -1 1 1 1 1] ,[0 0 0])

dataGen(2,[-1 1 -1 1 -1 1 1 1 1] ,[0 0 0],'ikine','analytic')

dataGen

dataGen(2,[-1 1 -1 1 -1 1 1 1 1] ,[0 0 0],'ikine','analytic')

dataGen

dataGen(2,[-1 1 -1 1 -1 1 1 1 1] ,[0 0 0],'ikine','analytic')

dataGen

dataGen(2,[-1 1 -1 1 -1 1 1 1 1] ,[0 0 0],'ikine','analytic')

dataGen(2,[-1 1 -1 1 -1 1 1 1 1] ,[0 0 0],'ikine','analytic','fileType','-v7')

Seriallink(1)

SerialLink(1)

dataGen(2,[-1 1 -1 1 -1 1 1 1 1] ,[0 0 0],'ikine','analytic','fileType','-v7')

dataGen(2,[-1 1 -1 1 -1 1 1 1 1] ,[0 0 0],'ikine','analytic','fileType','-v7','showcase','true')

dataGenWSsubspace(2,[-1 1 -1 1 -1 1 1 1 1] ,[0 0 0],'ikine','analytic','fileType','-v7','showcase','true')

dataGenWSsubspace(2,[-1 1 -1 1 -1 1 1 1 1] ,[0 0 0],'ikine','analytic','fileType','-v7','showcase',true)

p560.links.a

p560.links

p560.links(:).a

p560.links(1:6).a

for i= 1:6

end

D=[]

A=[];

alpha=[];

for i=1:6

D=horzcat(D,p560.links(i).d);

A=horzcat(A,p560.links(i).a);

alpha=horzcat(alpha,p560.links(i).alpha);

end

vec=[D,A,alpha];

dataGenWSsubspace(2,[-1 1 -1 1 -1 1 1 1 1] ,[0 0 0],'ikine','analytic','fileType','-v7','showcase',true)

21^3

dataGenWSsubspace(2)

dataGenScopesubspace(3,[-1 1 -1 1 -1 1 1 1 1] ,[1 1 1],'ikine','analytic','fileType','-v7')

dataGenScopeSubspace(3,[-1 1 -1 1 -1 1 1 1 1] ,[1 1 1],'ikine','analytic','fileType','-v7')

load('6DOFR3n3.pt3.3.3.02.12.18.20.44.mat')

dataGenScopeSubspace(3,[-1 1 -1 1 -1 1 1 1 1] ,[1 1 1],'ikine','analytic','fileType','-v7')

load('6DOFR3n3.pt3.3.3.02.12.18.20.45.mat')

2:5:3

dataGenKinSubspace(3,[-1 1 -1 1 -1 1 1 1 1] ,[1 1 1],'ikine','analytic','fileType','-v7')

load('6DOFR3n3.pt3.4.1.02.12.18.20.56.mat')

dataGenKinSubspace

dataGenKinSubspace(3,[-1 1 -1 1 -1 1 1 1 1] ,[1 1 1],'ikine','analytic','fileType','-v7')

dataGenKinSubspace(4,[-1 1 -1 1 -1 1 1 1 1] ,[1 1 1],'ikine','analytic','fileType','-v7')

dataGenKinSubspace(4,[-1 1 -1 1 -1 1 1 1 1] ,[1 1 1],'ikine','analytic','fileType','-v7','parallel',false)

dataGenKinSubspace

dataGenKinSubspace(4,[-1 1 -1 1 -1 1 1 1 1] ,[1 1 1],'ikine','analytic','fileType','-v7','parallel',false)

p=zeros(1,2)

rand(size(p))

dataGenNoSubspace(4,[-1 1 -1 1 -1 1 1 1 1] ,[1 1 1],'ikine','analytic','fileType','-v7','parallel',false)

load('6DOFR3n4.pt3.3.3.02.12.18.21.14.mat')

SerialLink(1)

tens2vec(1)

tens2vec(1kj)

tens2vec(1\*kj)

tens2vec(1\*'kj')

tens2vec('asoafosaihfsafa')

tens2vec(true)

tens2vec(true,2)

dataGenWSsubspace(2)

dataGenNoSubspace(1)

arbitraryManipulator6DOF(1)

SampleGeneration

clear all

time=[30.61 36.21 42.14 55.96 100.46]

rate=time.^-1

thiosulfate=[0.2 0.2 0.2 0.1 0.05]

hcl=[1 0.5 0.25 1 1]

hcl\_o1=hcl.^-1

hcl\_o2=hcl.^-1

hcl\_o1=ln(hcl)

hcl\_o1=log(hcl)

thiosulfate\_o1=log(thiosulfate)

thiosulfate\_o2=thiosulfate.^-1

plot(hcl\_01,rate)

plot(hcl\_o1,rate)

plot(time,hcl\_o1)

hold on

plot(time,hcl\_o2)

hold on

plot(time,hcl)

hcl./rate

hcl.^./rate

hcl.^2./rate

(hcl.^2)./rate

load('6R3\_0.1\_.25pi\_.25pi\_.25pi.mat')

clc

clear all

load('6R3\_0.1\_.25pi\_.25pi\_.25pi.mat')

sample=resM(1,:)

discretization(sample,'ikine','analytic')

discretization

discretization(sample,'ikine','analytic')

P=discretization(sample,'ikine','analytic')

%-- 2/13/2018 3:39 PM --%

a=null();

a=null(1);

load('6R3\_0.1\_.25pi\_.25pi\_.25pi.mat')

[a,b,c,d,e]=postProcessing(resM(1,:),resB(1,:))

postProcessing

[a,b,c,d,e]=postProcessing(resM(1,:),resB(1,:))

resB(1,:)

[a,b,c,d,e]=postProcessing(resM(1,:),resB(1,:))

[a,b,c,d,e]=postProcessing(resM(1,:),resB(2,:))

postProcessing

[a,b,c,d,e]=postProcessing(resM(1,:),resB(2,:))

resB(2,:)(3)

g=resB(2,:)

g(3)

[a,b,c,d,e]=postProcessing(resM(1,:),resB(1,:),'visualization',false)

postProcessing

[a,b,c,d,e]=postProcessing(resM(1,:),resB(1,:),'visualization',false)

load('6R3\_0.1\_.25pi\_.25pi\_.25pi.mat')

trainFeature=resM

ptFilter(h)

ptFilter('h')

%-- 2/13/2018 5:33 PM --%

2/.75

2/.075

2/.008

2/.005

a\_1=2

sSize=1323;

iterator1=1;

iterator2=sSize;

for i=1:7

iterator1=ierator2+1;

iterator2=iterator1+sSize;

end

sSize=1323;

iterator1=1;

iterator2=sSize;

for i=1:7

iterator1=iterator2+1

iterator2=iterator1+sSize;

end

sSize=1323;

iterator1=1;

iterator2=sSize;

for i=1:7

iterator1=iterator2+1

iterator2=iterator1+sSize-1;

end

sSize=1323;

iterator1=1;

iterator2=sSize;

for i=1:7

iterator1=iterator2+1

iterator2=iterator1+sSize-2;

end

9261/7

1:1323:9261

1:1322:9261

1324:1324+1323

size(1324:1324+1323)

size(1324:1324+1322)

Section6\_2

sSize=1323;

iterator1=1;

iterator2=sSize;

for i=1:7

iterator1=iterator2+1

iterator2=iterator1+sSize-1;

end

Section6\_2

any([1==1, 2>0, 3<0])

any([0==1, 2<0, 3<0])

zeros(1,1,3)

a=0:255

clear all

r=0:255

g=0:255

b=0:255

for i=1:256

color(:,i)=[r(i) g(i) b(i)]

end

for i=1:256

for j=1:256

for k=1:256

color(:,i)=[r(i) g(j) b(k)]

end

end

end

%-- 2/13/2018 7:23 PM --%

r=0:5:255

g=0:5:255

b=0:5:255

for i=1:256

for j=1:256

for k=1:256

color(:,i)=[r(i) g(j) b(k)]

end

end

end

indx=1

for i=0:5:255

for j=0:5:255

for k=0:5:255

color(:,indx)=[r(i) g(j) b(k)];

end

end

end

for i=0:5:255

for j=0:5:255

for k=0:5:255

color(:,i)=[r(i) g(j) b(k)];

indx=indx+1;

end

end

end

i1=1

i2=2

i3=3

for i=0:5:255

for j=0:5:255

for k=0:5:255

color(:,i)=[r(i1) g(i2) b(i3)];

indx=indx+1;

end

end

end

for i=0:5:255

for j=0:5:255

for k=0:5:255

color(:,i)=[r(i1) g(i2) b(i3)];

indx=indx+1;

i3=i3+1;

end

i2=i2+1;

end

i1=i1+1;

end

meshgrid(r,g,b)

r=0:255

g=0:255

b=0:255

for i=1:256

end

color=[];

for i=1:256

for j=1:256

for k=1:256

color(i,:)=[r(i),g(j),b(k)];

end

end

end

indx=1

for i=1:256

for j=1:256

for k=1:256

color(indx,:)=[r(i),g(j),b(k)];

indx=indx+1;

end

end

end

%-- 2/13/2018 8:06 PM --%

sSize=1323;

iterator1=1;

iterator2=sSize;

for i=1:7

iterator1=iterator2+1

iterator2=iterator1+sSize-1;

end

size(5293:5293+1322)

size(5293:5293+3086)

clear all

load('6R3\_1\_0\_0\_0\_1.5e5.mat')

CreateStochasticSamples

%-- 2/13/2018 9:19 PM --%

load('6R3\_1\_0\_0\_0\_1.5e5.mat')

resM=datasample(resM',1)';

load('6R3\_1\_0\_0\_0\_1.5e5.mat')

resM=datasample(resM,5000);

CreateStochasticSamples

load('6R3\_1\_0\_0\_0\_1.5e5.mat')

CreateStochasticSamples

clear all

load('6R3\_1\_0\_0\_0\_1.5e5.mat')

a=dataSample(resB,5)

a=datasample(resB,5)

load('6R3\_1\_0\_0\_0\_1.5e5.mat')

CreateStochasticSamples

load('6R3\_1\_0\_0\_0\_1.5e5.mat')

CreateStochasticSamples

load('6R3\_1\_0\_0\_0\_1.5e5.mat')

CreateStochasticSamples

Section6\_7

surf(final(1,:),final(2,:),final(3,:))

Section6\_7

[x,y]=meshgrid(1:4)

suf(x,y,final(1,:))

surf(x,y,final(1,:))

[x,y]=meshgrid(1:4,1:4)

scatter3(final(1,:),final(2,:),final(3,:))

scatter3(final(2,:),final(3,:),final(1,:))

z=zeros(4,4)

for i=1:4

for j=1:4

for k=1:16

if and(final(2,k)==

if and(final(2,k)==end

end

end

tri=delaunary(final(2,:),final(3,:));

tri=delaunay(final(2,:),final(3,:));

trisurf(tri,final(2,:),final(3,:),final(1,:))

Section6\_7

tri=delaunay(final(2,:),final(3,:));

trisurf(tri,final(2,:),final(3,:),final(1,:))

tri=delaunay(final(2,1:36),final(3,1:36));

trisurf(tri,final(2,1:36),final(3,1:36),final(1,1:36))

trisurf(tri,final(2,1:36),final(3,1:36),log(final(1,1:36)))

axis off

l = light('Position',[-50 -15 29])

set(gca,'CameraPosition',[208 -50 7687])

lighting phong

shading interp

colorbar EastOutside

trisurf(tri,final(2,1:36),final(3,1:36),log(final(1,1:36)))

axis off

l = light('Position',[-50 -15 29])

set(gca,'CameraPosition',[208 -50 7687])

lighting phong

shading interp

colorbar EastOutside

%-- 2/15/2018 5:59 PM --%

ZED\_Camera

%-- 2/17/2018 12:56 PM --%

load('section6\_1\_train1.mat')

tr.perf

DataExtraction

meanPerf=mean(perf);

stdPerf=std(perf);

errorbar(1:1001,meanPerf,stdPerf)

x = linspace(0,1,20)';

y = sin(x);

dy = .1\*(1+rand(size(y))).\*y; % made-up error values

fill([x;flipud(x)],[y-dy;flipud(y+dy)],[.9 .9 .9],'linestyle','none');

line(x,y)

semilogy(1:1001,meanPerf)

semilogy(1:1000,meanPerf(1:1000))

fill([meanPerf;flipud(meanPerf)],[y-stdPerf;flipud(y+stdPerf)],[.9 .9 .9],'linestyle','none');

fill([1:1000;flipud(1:1000)],[meanPerf(1:1000)-stdPerf(1:1000);flipud(meanPerf(1:1000)+stdPerf(1:1000))],[.9 .9 .9],'linestyle','none');

line(meanPerf,stdPerf)

line(1:1000,meanPerf)

line(1:1000,meanPerf(1:1000)

line(1:1000,meanPerf(1:1000))

fill([1:1000;flipud(1:1000)],[meanPerf(1:1000)-stdPerf(1:1000);flipud(meanPerf(1:1000)+stdPerf(1:1000))],[.9 .9 .9],'linestyle','none');

boundedline(1:1001,meanPerf,stdPerf)

boundedline(1:1001,log(meanPerf),stdPerf)

boundedline(1:100,meanPerf(1:100),stdPerf(1:100))

meanGrad=mean(grad);

stdGrad=std(grad)

boundedline(1:600,meanGrad(1:600),stdGrad(1:600))

boundedline(1:300,meanGrad(1:300),stdGrad(1:300))

boundedline(1:300,log(meanGrad(1:300)),stdGrad(1:300))

boundedline(1:300,log(meanPerf(1:300)),stdPerf(1:300))

clear x y dy ans

DataExtraction

mean(f\_score)

std(f\_score)

boundedline(1:300,log(meanPerf(1:300)),stdPerf(1:300))

boundedline(1:300,meanGrad(1:300),stdGrad(1:300))

set(gca,'XScale','log')

boundedline(1:300,meanGrad(1:300),stdGrad(1:300))

set(gca,'Yscale','log')

boundedline(1:300,meanGrad(1:300),stdGrad(1:300))

set(gca,'Yscale','log')

boundedline(1:300,log(meanPerf(1:300)),stdPerf(1:300))

set(gca,'Yscale','log')

boundedline(1:300,log(meanPerf(1:300)),stdPerf(1:300))

set(gca,'Yscale','log')

delete(he);

[hl,hp] = boundedline(1:1001,meanGrad,b,'-bo', 'nan', 'fill');

ho = outlinebounds(hl,hp);

set(ho, 'linestyle', ':', 'color', 'r', 'marker', '.');

[hl,hp] = boundedline(1:1001,meanGrad,stdGrad,'-bo', 'nan', 'fill');

set(gca,'Yscale','log')

delete([hl hp ho]);

[hl,hp] = boundedline(x,y,b,'-bo', 'nan', 'gap');

ho = outlinebounds(hl,hp);

set(ho, 'linestyle', ':', 'color', 'r', 'marker', '.');

figure

set(gca,'Yscale','log')

boundedline(1:300,log(meanPerf(1:300)),stdPerf(1:300))

confidence\_plot\_test

confplot(1:1000,meanGrad(1:1000),stdGrad(1:1000),stdGrad(1:1000),'Color',[1 0 0],'LineWidth',2)

set(gca,'Yscale','log')

confplot(1:1000,meanGrad(1:1000),stdGrad(1:1000),stdGrad(1:1000),'Color',[1 0 0])

set(gca,'Yscale','log')

confplot(1:100,meanGrad(1:100),stdGrad(1:100),stdGrad(1:100),'Color',[1 0 0])

set(gca,'Yscale','log')

confplot(1:100,log(meanGrad(1:100)),stdGrad(1:100),stdGrad(1:100),'Color',[1 0 0])

boundedline(1:300,log(meanPerf(1:300)),stdPerf(1:300))

mean(f\_score)

boundedline(1:300,log(meanPerf(1:300)),stdPerf(1:300))

DataExtraction

clear x y z1 z2

clear hl hp

clear ans

load('section6\_1\_train5.mat')

clear all

load('section6\_1\_train5.mat')

net=section6\_1

nonfunction\_PredictionValidation

scatter(1:1323000,absoluteError,0.5,'filled')

sum(absoluteError>0.5)

histcounts(absoluteError)

histogram(absoluteError)

set(gca,'Yscale','log')

histogram(absoluteError)

histogram(absoluteError,'facecolor','b')

error=(linearRaw-linearOriginal)

histogram(error)

set(gca,'Yscale','log')

histogram(error,20)

histogram(error,80)

set(gca,'Yscale','log')

histogram(error,50)

set(gca,'Yscale','log')

histogram(error,50,)

histogram(error,50,'faceColor','b')

set(gca,'Yscale','log')

xlabel('Error')

ylabel('Number of predictions')

title('Error histogram of predictions made by the DNN')

title('Error histogram of predictions made by the DNN (filter threshold 0.5)')

clear all

load('Visualization.mat')

boundedline(1:1000,meanPerf,stdPerf,,'b')

boundedline(1:1000,meanPerf,stdPerf,'b')

boundedline(1:5000,meanPerf(1:500),stdPerf(1:500),'b')

boundedline(1:500,meanPerf(1:500),stdPerf(1:500),'b')

boundedline(1:100,meanPerf(1:100),stdPerf(1:100),'b')

set(gca,'Yscale','log')

boundedline(200:1000,meanPerf(200:1000),stdPerf(200:1000),'b')

set(gca,'Yscale','log')

boundedline(200:1000,meanPerf(200:1000),stdPerf(200:1000),'b')

boundedline(1:100,meanPerf(1:100),1.96.\*stdPerf(1:100)./sqrt(10),'b')

set(gca,'Yscale','log')

boundedline(1:100,meanPerf(1:100),1.645.\*stdPerf(1:100)./sqrt(10),'b')

set(gca,'Yscale','log')

boundedline(1:100,meanPerf(1:100),1.645.\*stdPerf(1:100)./sqrt(10),'b')

set(gca,'Yscale','log')

boundedline(1:100,meanPerf(1:100),1.645.\*stdPerf(1:100)./sqrt(10),'b')

z=1.645.\*stdPerf(1:100)./sqrt(10)

z<0

all(z<0)

sum(z<0)

boundedline(1:100,meanPerf(1:100),1.645.\*stdPerf(1:100)./sqrt(10),'b')

boundedline(1:100,meanGrad(1:100),1.645.\*stdGrad(1:100)./sqrt(10),'b')

boundedline(1:100,meanPerf(1:100),1.645.\*stdPerf(1:100)./sqrt(10),'b')

boundedline(1:100,meanGrad(1:100),1.645.\*stdGrad(1:100)./sqrt(10),'r')

meanPerf=mean(perf(:,1:1000));

stdPerf=std(perf(:,1:1000));

boundedline(1:100,meanPerf(1:100),1.645.\*stdPerf(1:100)./sqrt(10),'b')

boundedline(1:100,meanGrad(1:100),1.645.\*stdGrad(1:100)./sqrt(10),'r')

boundedline(1:100,meanGrad(1:100),1.96.\*stdGrad(1:100)./sqrt(10),'r')

boundedline(1:100,meanPerf(1:100),1.96.\*stdPerf(1:100)./sqrt(10),'b')

set(gca,'Yscale','log')

boundedline(1:100,meanGrad(1:100),1.96.\*stdGrad(1:100)./sqrt(10),'r')

boundedline(1:100,meanGrad(1:100),1.96.\*stdGrad(1:100)./sqrt(10),'y')

boundedline(1:100,meanPerf(1:100),1.96.\*stdPerf(1:100)./sqrt(10),'b')

set(gca,'Yscale','log')

boundedline(1:100,meanPerf(1:200),1.96.\*stdPerf(1:200)./sqrt(10),'b')

boundedline(1:200,meanPerf(1:200),1.96.\*stdPerf(1:200)./sqrt(10),'b')

set(gca,'Yscale','log')

grid on

xlabel('Gradient updates')

ylabel('Performance (mean squared error)')

1323\*4=1

1323\*4+1

1323\*5

title('6DOF\_R3-5293-6615 Training')

title('6DOF-R3\_{5293-6615} Training')

title('6DOF-R^3\_{5293-6615} Training')

title('6DOF-R^3 (5293-6615) Training')

title('6DOF-R^3 (5293-6615) Training first 200 updates')

boundedline(1:1000,meanPerf(1:1000),1.96.\*stdPerf(1:1000)./sqrt(10),'b')

load('section6\_1\_train5.mat')

view(section6\_1)

load('test.mat')

rawNetData=net(trainFeature);

rawNetData=net(resM');

rawNetData=section6\_1(resM');

mRaw=mean(rawNetData\_

mRaw=mean(rawNetData)

mRaw=mean(rawNetData')

absErr=abs(rawNetData'-resB(1323\*4+1:1323\*5,:))

absErr=abs(rawNetData'-resB(:,1323\*4+1:1323\*5))

meanErr=mean(absErr)

postProcessing(resM(1,:),meanErr)

postProcessing(resM(1,:),meanErr')

postProcessing(resM(1,:)',meanErr)

postProcessing(resM(1,:),meanErr)

postProcessing(resM(1,:),meanErr')

postProcessing(resM(1,:),cat(zeros(1,1323\*4),meanErr,zeros(1,1323\*2)))

postProcessing(resM(1,:),[zeros(1,1323\*4),meanErr,zeros(1,1323\*2)])

postProcessing

postProcessing(resM(1,:),[zeros(1,1323\*4),meanErr,zeros(1,1323\*2)])

postProcessing(resM(1,:),[zeros(1,1323\*4),meanErr,zeros(1,1323\*2)],'ptSize',50)

title('Average absolute error of predictions on points in R^3')

clear all

DataExtraction

for i=1:num

semilogy(1:1000,grad(i,1:1000));

hold on

end

legend('subspace1','subspace2','subspace3','subspace4','subspace5','subspace6','subspace7')

xlabel('Gradient updates')

ylabel('Performance (mean squared error)')

title('6DOF-R^3 Training of subspaces with the same dimension')

dataGenWSsubspace('showcase','true')

dataGenWSsubspace([],[],'showcase','true')

dataGenWSsubspace([],[],'showcase',true)

dataGenWSsubspace([],[-1 1 -1 1 -1 1 .1 .1 .1],'showcase',true)

dataGenWSsubspace(1,[-1 1 -1 1 -1 1 .1 .1 .1],'showcase',true)

load('6DOFR3n1.pt21.21.21.02.17.18.15.13.mat')

dataGenWSsubspace(1,[-1 1 -1 1 -1 1 .1 .1 .1],[0 0 0],'showcase',true)

dataGenWSsubspace(1,[-1 1 -1 1 -1 1 .1 .1 .1],[0 0 0],'showcase',true,'ikine','analytic')

load('6DOFR3n1.pt21.21.21.02.17.18.15.13.mat')

clear all

load('6DOFR3n1.pt21.21.21.02.17.18.15.13.mat')

dataGenWSsubspace(1,[-1 1 -1 1 -1 1 .1 .1 .1],[0 0 0],'showcase',true,'ikine','analytic')

load('6DOFR3n1.pt21.21.21.02.17.18.15.19.mat')

clear all

load('6DOFR3n1.pt21.21.21.02.17.18.15.19.mat')

load('section6\_2\_1.mat')

1=section6\_2

n1=section6\_2

load('section6\_2\_2.mat')

n2=section6\_2

load('section6\_2\_3.mat')

n3=section6\_2

load('section6\_2\_4.mat')

n4=section6\_2

load('section6\_2\_5.mat')

n5=section6\_2

load('section6\_2\_6.mat')

n6=section6\_2

load('section6\_2\_7.mat')

n7=section6\_2

load('6DOFR3n1.pt21.21.21.02.17.18.15.19.mat')

postProcessing(trainFeature,[n1(trainFeature),n2(trainFeature),n3(trainFeature),n4(trainFeature),n5(trainFeature),n6(trainFeature),n7(trainFeature)],'ptSize',50)

postProcessing(trainFeature,[n1(trainFeature'),n2(trainFeature'),n3(trainFeature'),n4(trainFeature'),n5(trainFeature'),n6(trainFeature'),n7(trainFeature')],'ptSize',50)

postProcessing(trainFeature,pFilter([n1(trainFeature'),n2(trainFeature'),n3(trainFeature'),n4(trainFeature'),n5(trainFeature'),n6(trainFeature'),n7(trainFeature')],0.5),'ptSize',50)

postProcessing(trainFeature,ptFilter([n1(trainFeature'),n2(trainFeature'),n3(trainFeature'),n4(trainFeature'),n5(trainFeature'),n6(trainFeature'),n7(trainFeature')],0.5),'ptSize',50)

postProcessing(trainFeature,[n1(trainFeature'),n2(trainFeature'),n3(trainFeature'),n4(trainFeature'),n5(trainFeature'),n6(trainFeature'),n7(trainFeature')],'ptSize',50)

postProcessing(trainFeature,[n1(trainFeature'),n2(trainFeature'),n3(trainFeature'),n4(trainFeature'),n5(trainFeature'),n6(trainFeature'),n7(trainFeature')],'ptSize',5)

postProcessing(trainFeature,[n1(trainFeature'),n2(trainFeature'),n3(trainFeature'),n4(trainFeature'),n5(trainFeature'),n6(trainFeature'),n7(trainFeature')],'ptSize',25)

postProcessing(trainFeature,ptFilter([n1(trainFeature'),n2(trainFeature'),n3(trainFeature'),n4(trainFeature'),n5(trainFeature'),n6(trainFeature'),n7(trainFeature')],0.5),'ptSize',15)

subplot(1,2)

subplot(1,2,1)

postProcessing(trainFeature,ptFilter([n1(trainFeature'),n2(trainFeature'),n3(trainFeature'),n4(trainFeature'),n5(trainFeature'),n6(trainFeature'),n7(trainFeature')],0.5),'ptSize',15)

figure11

figure 11

figure(11)

title('Constant orientation workspace of PUMA560 robot generated by 7 subspace models')

title('Workspace of PUMA560 robot generated by 7 subspace models')

xlabel('R')

ylabel('R')

zlabel('R')

figure(3)

title('Workspace of PUMA560 robot generated by 7 subspace models (filter threshold 0.5)')

view(n1)

DataExtraction

error=predictionValidation(n1)

[~,error]=predictionValidation(n1)

DataExtraction

histogram(error)

histogram('BinEdges',-2:2,'BinCounts',[5 8 15 9])

figure

histf(S1,-1:0.05:1,'facecolor',error(1,:),'facealpha',.5,'edgecolor','none')

histf(error(1,:）,-1:0.05:1,'facecolor','r','facealpha',.5,'edgecolor','none')

histf(error(1,:),-1:0.05:1,'facecolor','r','facealpha',.5,'edgecolor','none')

hist(error(1,:),-1:0.05:1,'facecolor','r','facealpha',.5,'edgecolor','none')

hb=histogram(error(1:1323000))

hb=hist(error(1:1323000))

hb=hist(error(1:1323000),-1:0.05:1)

bar(hb)

hb=hist(error(1:1323000),-1:0.05:1,'facecolor',map(1,:),'facealpha',.5,'edgecolor','none')

hb=hist(error(1:1323000),-1:0.05:1,'facecolor','c','facealpha',.5,'edgecolor','none')

bar(hb)

bar(hb，'facecolor','c','facealpha',.5,'edgecolor','none')

bar(hb,'facecolor','c','facealpha',.5,'edgecolor','none')

hist=zeros(7,41);

for i=1:num

hist(i,:)=hist(error(i:1323000),-1:0.05:1);

end

histo=zeros(7,41);

for i=1:num

histo(i,:)=hist(error(i:1323000),-1:0.05:1);

end

hist(error(i:1323000),-1:0.05:1);

histo=zeros(7,41);

for i=1:num

histo(i,:)=hist(error(i,:),-1:0.05:1);

end

hist(error(i,:),-1:0.05:1);

error(1,:);

-1:0.05:1

hist(error(i,:),(-1:0.05:1));

histo=zeros(7,41);

for i=1:num

histo(i,:)=hist(error(i,:),20);

end

histo=cell(1,num);

for i=1:num

histo(i)=histogram(error(i,:),20);

end

histo=cell(1,num);

for i=1:num

histo{i}=histogram(error(i,:),20);

end

hold on

DataExtraction

subplot(2,2,1)

subplot(2,2,4)

DataExtraction

figure(2)

title('Error histogram of predictions made by the DNN')

title('Error histogram of predictions made by DNN')

clear ans error hb hist histo

load('test.mat')

runTimeAnalysis

n=[n1 n2 n3 n4 n5 n6 n7]

n=cell([n1 n2 n3 n4 n5 n6 n7]);

n=cell(n1, n2 ,n3, n4, n5, n6, n7);

n=cell{n1, n2 ,n3, n4, n5, n6, n7};

n=cell({n1});

n=cell({n1},{n2},{n3},{n4},{n5},{n6},{n7});

n=cell([{n1},{n2},{n3},{n4},{n5},{n6},{n7}]);

runTimeAnalysis

trainFeature(1,:);

runTimeAnalysis

postProcessing

runTimeAnalysis

postProcessing

runTimeAnalysis

21^3

runTimeAnalysis

set(gca,'Yscale','log')

runTimeAnalysis

grid on

legend('subspace1','subspace2','subspace3','subspace4','subspace5','subspace6','subspace7')

xlabel('Sample number')

ylabel('Run time')

title('Run time of subspace models')

DataExtraction

for i=1:num

semilogy(1:1000,grad(i,1:1000));

hold on

end

legend('inputMap','bothMap','noMap','outputMap')

xlabel('Gradient updates')

ylabel('Performance (mean squared error)')

title('6DOF-R^3 (5293-6615) Training with different fine-tuning choices')

subplot(1,2,1);

for i=1:2

histogram(error(i,:),[-1:0.025:1]);

set(gca,'Yscale','log')

xlabel('Error')

ylabel('# predictions')

legend('inputMap','bothMap')

hold on

end

subplot(1,2,2);

for i=3:4

histogram(error(i,:),[-1:0.025:1]);

set(gca,'Yscale','log')

xlabel('Error')

ylabel('# predictions')

legend('noMap','outputMap')

hold on

end

for i=1:4

[f\_score(i),error(i,:)]=predictionValidation(section6\_4);

end

subplot(1,2,1);

for i=1:2

histogram(error(i,:),[-1:0.025:1]);

set(gca,'Yscale','log')

xlabel('Error')

ylabel('# predictions')

legend('inputMap','bothMap')

hold on

end

subplot(1,2,2);

for i=3:4

histogram(error(i,:),[-1:0.025:1]);

set(gca,'Yscale','log')

xlabel('Error')

ylabel('# predictions')

legend('noMap','outputMap')

hold on

end

error=zeros(num,1323000);

for i=1:num

load(strcat('section6\_4\_',num2str(i),'.mat'))

perf(i,:)=tr.perf;

grad(i,:)=tr.gradient;

[f\_score(i),error(i,:)]=predictionValidation(section6\_4);

end

subplot(1,2,1);

for i=1:2

histogram(error(i,:),[-1:0.025:1]);

set(gca,'Yscale','log')

xlabel('Error')

ylabel('# predictions')

legend('inputMap','bothMap')

hold on

end

subplot(1,2,2);

for i=3:4

histogram(error(i,:),[-1:0.025:1]);

set(gca,'Yscale','log')

xlabel('Error')

ylabel('# predictions')

legend('noMap','outputMap')

hold on

end

runTimeAnalysis

DataExtraction

clear all

DataExtraction

tr.perf

predictionValidation(section6\_5)

[a,b]=predictionValidation(section6\_5)

f\_score(5)=a

error(5,:)=b;

DataExtraction

load('Visualization.mat')

load('section6\_1\_train1.mat')

net.activationFcn

net.layers.transferFcn

net.layers{1}.transferFcn

section6\_1.layers{1}.transferFcn

figure(3)

title()

title("")

avg(f\_score)

mean(f\_score)

std(f\_score)

mas(f\_score)

max(f\_score)

view(section6\_1)

clear all

load('C:\Users\Alexander Liao\Documents\GitHub\Subspace-Learning\Deep-neural-network\6\_5-version1\cp\_fscore.mat')

cp=f\_score

load('C:\Users\Alexander Liao\Documents\GitHub\Subspace-Learning\Deep-neural-network\6\_5-version1\mae\_fscore.mat')

mae=f\_score

load('C:\Users\Alexander Liao\Documents\GitHub\Subspace-Learning\Deep-neural-network\6\_5-version1\mse\_fscore.mat')

mse=f\_score

load('section6\_5\_crossentropy (1).mat')

clear all

load('f\_score\_length.mat')

length=f\_score

load('f\_score\_depth.mat')

depth=f\_score

clear f\_score

scatter(3:7,depth)

plot(3:7,depth)

set(gca,'XTick',3:7)

set(gca,'YTick',0:0.1:1)

plot(3:7,depth)

set(gca,'XTick',3:7)

ylim([0 1])

ylim([0.5 1])

ylim([0.9 1])

plot(3:7,depth,'lineWidth',2)

set(gca,'XTick',3:7)

ylim([0.9 1])

grid on

xlabel('Layer depth')

ylabel('F-measure')

scatter(3:7,depth)

plot(3:7,depth,'lineWidth',2)

set(gca,'XTick',3:7)

ylim([0.9 1])

grid on

xlabel('Layer depth')

ylabel('F-measure')

hold on

scatter(3:7,depth,20,'filled')

hold on

scatter(3:7,depth,50,'filled')

scatter(3:7,depth,75,'filled')

scatter(3:7,depth,90,'filled')

plot(50:10:100,width,'lineWidth',2)

plot(50:10:100,length,'lineWidth',2)

set(gca,'XTick',50:10:100)

ylim([0.9 1])

grid on

xlabel('Layer width')

ylabel('F-measure')

scatter(50:10:100,depth,90,'filled')

scatter(50:10:100,length,90,'filled')

plot(50:10:100,length,'lineWidth',2)

set(gca,'XTick',50:10:100)

ylim([0.9 1])

grid on

xlabel('Layer width')

ylabel('F-measure')

hold on

ylabel('F-measure')

hold on

scatter(50:10:100,length,90,'filled')

subplot(1,2,1)

subplot(2,1,1)

plot(3:7,depth,'lineWidth',2)

set(gca,'XTick',3:7)

ylim([0.9 1])

grid on

xlabel('Layer depth')

ylabel('F-measure')

hold on

scatter(3:7,depth,20,'filled')

hold on

scatter(3:7,depth,50,'filled')

scatter(3:7,depth,75,'filled')

scatter(3:7,depth,90,'filled')

subplot(2,1,2)

plot(50:10:100,length,'lineWidth',2)

set(gca,'XTick',50:10:100)

ylim([0.9 1])

grid on

xlabel('Layer width')

ylabel('F-measure')

hold on

ylabel('F-measure')

hold on

scatter(50:10:100,length,90,'filled')

Section6\_7

%-- 2/17/2018 10:28 PM --%

Section6\_7

final=[final,2]

Section6\_7

clear all

DataExtraction

tr.perf;

clear all

load('section6\_3\_R3 (1).mat')

f\_score=zeros(1,5);

load('section6\_3\_R3 (1).mat')

f\_score=predictionValidation(section6\_3\_R3\_01);

f\_score=predictionValidation(section6\_3\_R3\_01\_3086);

clear all

load('section\_sl1.mat')

load('section\_normal.mat')

f\_score(1)=predictionValidation(section\_sl1);

tr.perf=perf1

perf1=tr.perf;

load('section\_nosl.mat')

perf2=tr.perf;

load('section\_normal.mat')

perf3=tr.perf;

semilogy(1:500,perf(1:500))

semilogy(1:500,perf1(1:500))

ylabel('Gradient')

DataExtraction

for i=1:num

semilogy(1:1000,perf(i,1:1000));

hold on

end

grid on

legend('subspace1','subspace2','subspace3','subspace4','subspace5','subspace6','subspace7')

xlabel('G

xlabel('Gradient updates')

ylabel('Performance (mean squared error)')

for i=1:num

semilogy(1:1000,perf(i,1:1000),'LineWidth',1);

hold on

end

for i=1:num

semilogy(1:1000,perf(i,1:1000),'LineWidth',1.5);

hold on

end

xlabel('Gradient updates')

ylabel('Performance (mean squared error)')

legend('subspace1','subspace2','subspace3','subspace4','subspace5','subspace6','subspace7')

grid on

semilogy(1:500,perf1(1:500),'lineWidth',1);

hold on

semilogy(1:500,perf2(1:500),'lineWidth',1);

semilogy(1:500,perf3(1:500),'lineWidth',1);

load('section\_normal.mat')

clear all

load('section\_sl1.mat')

perf1=tr.perf;

load('section\_nosl.mat')

perf2=tr.perf;

load('section\_normal.mat')

perf3=tr.perf;

semilogy(1:500,perf1(1:500),'lineWidth',1);

hold on

semilogy(1:500,perf3(1:500),'lineWidth',1);

semilogy(1:500,perf1(1:500),'lineWidth',1);

hold on

semilogy(1:500,perf3(1:500),'lineWidth',1);

hold on

semilogy(1:101,perf2(1:101),'lineWidth',1);

legend('no subspace','subspace embedding','workspace embedding')

legend('subspace embedding','workspace embedding','no subspace')

legend('workspace embedding','subspace embedding','no subspace')

grid on

semilogy(1:500,perf1(1:500),'lineWidth',1.5,'-');

hold on

semilogy(1:500,perf3(1:500),'lineWidth',1.5,'-.');

hold on

semilogy(1:101,perf2(1:101),'lineWidth',1.5,'--');

legend('no subspace','subspace embedding','workspace embedding')

legend('subspace embedding','workspace embedding','no subspace')

legend('workspace embedding','subspace embedding','no subspace')

grid on

semilogy(1:500,perf1(1:500),'lineWidth',1.5);

hold on

semilogy(1:500,perf3(1:500),'lineWidth',1.5);

hold on

semilogy(1:101,perf2(1:101),'lineWidth',1.5);

legend('no subspace','subspace embedding','workspace embedding')

legend('subspace embedding','workspace embedding','no subspace')

legend('workspace embedding','subspace embedding','no subspace')

grid on

xlabel('Gradient updates')

ylabel('Performance (mean squared error)')

load('6DOFSO3noSL.n1000.L9261.01.22.18.23.24.mat')

clear all

load('section\_sl1.mat')

test

load('section\_nosl.mat')

test

truePos

load('section\_sl1.mat')

load('testsl1.mat')

load('testNosl.mat')

precision

test

load('test.mat')

test

load('section\_normal.mat')

test

load('section\_sl1.mat')

test

load('section\_nosl.mat')

test

clear all

load('section6\_3\_R3\_01 (1).mat')

%-- 2/18/2018 1:35 AM --%

load('section6\_3\_R3\_01 (1).mat')

load('test.mat')

timeAnalysis

semilogy(tDNN)

hold on

semilogy(1:sampleSize,tClassical,'lineWidth',2)

timeAnalysis

semilogy(tDNN,'--')

semilogy(tDNN,'--','lineWidth',1)

semilogy(1:sampleSize,tClassical,'lineWidth',1)

semilogy(tDNN,'--','lineWidth',1)

hold on

semilogy(1:sampleSize,tClassical,'lineWidth',1)

timeAnalysis

load('section6\_3\_R3\_01 (1).mat')

clear all

load('section6\_3\_R3\_01 (1).mat')

load('section6\_3\_R3\_01 (2).mat')

timeAnalysis

load('test1.mat')

timeAnalysis

nonfunction\_PredictionValidation

clear all

load('test0.5.mat')

timeAnalysis

load('section6\_3\_R3\_01 (2).mat')

load('section6\_3\_R3\_01 (1).mat')

load('section6\_3\_R3\_01 (2).mat')

load('section6\_3\_R3\_01 (3).mat')

timeAnalysis

clear all

load('time1.mat')

mean1=mean(tDNN);

std1=std(tDNN);

classical1m=mean(tClassical);

classical1s=std(tClassical);

errorbar(mean1,std1)

c=categorical({'1','0.5'});

load('time05.mat')

mean2=mean(tDNN);

std2=std(tDNN);

classical2m=mean(tClassical);

classical2s=std(tClassical);

time=[mean1,classical1m; mean2, classical2m];

bar(c,time);

set(gca,'Yscale','log')

grid on

legend('DNN','classical')

errorbar(mean1,std1)

bar(c,time);

set(gca,'Yscale','log')

grid on

legend('DNN','classical')

hold on

errorbar(mean1,std1)

a=[0,1,0,0;

4,3,2,1;

2,2,1,3;

1,0,0,0];

b=[0,1,0,0;

1,2,1,1;

1,1,1,2;

1,0,0,0];

ctrs = 1:4;

data = a;

figure(1)

hBar = bar(ctrs, data);

for k1 = 1:size(a,1)

ctr(k1,:) = bsxfun(@plus, hBar(1).XData, [hBar(k1).XOffset]');

ydt(k1,:) = hBar(k1).YData;

end

hold on

errorbar(ctr, ydt, b, '.r')

hold off

barwithError

clear all

load('time1.mat')

mean1=mean(tDNN);

std1=std(tDNN);

classical1m=mean(tClassical);

classical1s=std(tClassical);

errorbar(mean1,std1)

c=categorical({'1','0.5'});

load('time05.mat')

mean2=mean(tDNN);

std2=std(tDNN);

classical2m=mean(tClassical);

classical2s=std(tClassical);

barwithError

plotlysetup

cd ~/Downloads/MATLAB-Online-master

cd /Downloads/MATLAB-Online-master

cd C:\Users\Alexander Liao\Downloads\MATLAB-Online-master

cd "C:\Users\Alexander Liao\Downloads\MATLAB-Online-master"

plotlysetup('alexander\_liao','••••••••••')

Untitled2

plotlysetup('alexander\_liao','GHt3plD2SwVtniCf3mMY')

Untitled2

load('time05.mat')

load('time1.mat')

mD1=mean(tDNN)

sD1=std(tDNN)

mC1=mean(tClassical)

sC1=mean(tClassical)

load('time05.mat')

mD2=mean(tDNN)

sD2=std(tDNN)

mC2=mean(tClassical)

sC2=mean(tClassical)

Untitled2

sC2=std(tClassical)

Untitled2

sC1=std(tClassical)

Untitled2

clear all

load('section6\_3\_R3\_01 (4).mat')

load('section6\_3\_R3\_01 (3).mat')

load('section6\_3\_R3\_01 (4).mat')

load('section6\_3\_R3\_01 (5).mat')

load('test.mat')

timeAnalysis

timeAnalysis

load('time01.mat')

load('time01\_2.mat')

clear all

load('time01\_2.mat')

m1=tClassical

mD=tDNN

load('time01.mat')

m1=[tClassical,m1];

mD=[tDNN,mD]'

mD=mD';

mean(m1);

meanC=ans;

stdC=std(m1);

meanD=(mD);

meanD=mean(mD);

stdD=std(mD);

load('time01.mat')

load('time1.mat')

std(tClassical)

ans

mean(tDNN0

mean(tDNN)

std(tDNN)

feedforwardnet([10 10 10])

net=ans

net.layers.transferFcn

load('test.mat')

%-- 2/19/2018 7:46 PM --%

figure 1

figure(1)

x=[-1 1 -1 1];

y=[1 -1 1 -1];

z=[1 -1 1 -1];

patch(x,y,z);

z=[1 1 1 1];

patch(x,y,z);

figure(1)

patch(x,y,z);

patch(z,x,y);

patch(z,y,y);

X = [0 1 1 2; 1 1 2 2; 0 0 1 1];

Y = [1 1 1 1; 1 0 1 0; 0 0 0 0];

Z = [1 1 1 1; 1 0 1 0; 0 0 0 0];

patch(x,y,z);

patch(X,Y,Z);

clear x y z

x=[-1; 1; -1; 1];

y=[1; -1; 1; -1];

z=[1; -1; 1; -1];

patch(x,y,z);

vert = [0 0 0;1 0 0;1 1 0;0 1 0;0 0 1;1 0 1;1 1 1;0 1 1];

patch('vertices',vert)

fac = [1 2 6 5;2 3 7 6;3 4 8 7;4 1 5 8;1 2 3 4;5 6 7 8];

patch('vertices',vert,'Faces',fac)

vert = [0 0 0;...1 0 0;1 1 0;0 1 0;0 0 1;1 0 1;1 1 1;0 1 1];

Faces

end

]

Faces

patch('vertices',vert,'Faces',fac)

patch('vertices',vert,'Faces',fac,'FaceAlpha',0.3)

21\*21\*7

Faces

legend('Predictions','Subspace1','Subspace2','Subspace3','Subspace4','Subspace5','Subspace6','Subspace7')

Faces

Creating-patches

Creating\_patches

figure(1)

title()

title('')

%-- 2/20/2018 2:13 PM --%

0.224^2/((0.903)^3\*(0.411))

1/(8.3\*10^-3)

ans^2

1/(3.1\*10^4)\

1/(3.1\*10^4)

1/(3.1\*10^-4)

ans\*(8.3\*10^-3)^2

%-- 2/20/2018 7:18 PM --%

net

%-- 2/20/2018 11:19 PM --%