Fusion class

properties

Prior

weightMatrix = [ 0 1.4672 2.0749 1.4672 0 -1.4672 -2.0749 -1.4672 0.0000 4.0273 5.6954 4.0273 0.0000 -4.0273 -5.6954 -4.0273 0;

2.0749 1.4672 -0.0000 -1.4672 -2.0749 -1.4672 0 1.4672 5.6954 4.0273 -0.0000 -4.0273 -5.6954 -4.0273 0.0000 4.0273 0;

-3.6208 -3.6208 -3.6208 -3.6208 -3.6208 -3.6208 -3.6208 -3.6208 -12.8229 -12.8229 -12.8229 -12.8229 -12.8229 -12.8229 -12.8229 -12.8229 0]

subclassToClassMapping = [ones(1,8) 2\*ones(1,8) 3]

XterrainMesh

YterrainMesh

Post = surf([],[],[]);

function obj = Fusion(xTerrainMax,yTerrainMax,p)

start

libPath = p; % path to MatlabLib folder; % param

addpath(genpath(libPath));

dictionarySize = 3; %#ok<NASGU>

isPlotOutputPdf = false; % param

xTerrainMin = 0; %-20; % meters % param

yTerrainMin = 0; %-10; % meters % param

xGridResolution = 0.5; % meters % param

yGridResolution = xGridResolution; % meters

xGrid = xTerrainMin:xGridResolution:xTerrainMax;

yGrid = yTerrainMin:yGridResolution:yTerrainMax;

[obj.XterrainMesh, obj.YterrainMesh] = meshgrid(xGrid, yGrid);

dXmixand = 7; %2%LOW\_RES

dYmixand = 7; %2%LOW\_RES

sdMixand = 15; %5%LOW\_RES

priorTerrainMargin = 20;

XYmesh = [obj.XterrainMesh(:), obj.YterrainMesh(:)];

priorGMdistributionXY = GenerateUniformGMpX(isPlotOutputPdf, dXmixand,dYmixand,sdMixand,priorTerrainMargin, ...

xTerrainMin,xTerrainMax,yTerrainMin,yTerrainMax, ...

XYmesh,obj.XterrainMesh,obj.YterrainMesh);

obj.Prior = log(priorGMdistributionXY);

figure(1)

obj.Post = surf(obj.XterrainMesh,obj.YterrainMesh,exp(obj.Prior'),'EdgeColor','none','FaceAlpha',0.5);

view(2)

title('Prior','fontsize',15)

xlabel('x\_0 (m)','fontsize',15)

ylabel('x\_1 (m)','fontsize',15)

colorbar

colormap(jet)

hold on

stop

function updateFusion(obj)

start

lnpX = obj.Prior;

lnpDgivenXandXl\_input = log(Li');

lnpDandXgivenXl = lnpDgivenXandXl\_input + lnpX;

lnpDandXgivenXl\_max = max(max(lnpDandXgivenXl));

lnpD = lnpDandXgivenXl\_max + log( sum(sum( exp(lnpDandXgivenXl-lnpDandXgivenXl\_max) )) );

lnpXgivenD = lnpDandXgivenXl - lnpD;

obj.Prior = lnpXgivenD;

set(obj.Post,'XData',obj.XterrainMesh,'YData',obj.YterrainMesh,'ZData',exp(lnpXgivenD'),'EdgeColor','none','FaceAlpha',0.5);

view(2)

stop

function slowFusion(obj,c)

start

lnpX = obj.Prior;

lnpDgivenXandXl\_input = lnpDGivenXfromWeights\_singleD(obj.weightMatrix, obj.subclassToClassMapping,obj.XterrainMesh,obj.YterrainMesh, c(2:3),c(1));

lnpDandXgivenXl = lnpDgivenXandXl\_input + lnpX;

lnpDandXgivenXl\_max = max(max(lnpDandXgivenXl));

lnpD = lnpDandXgivenXl\_max + log( sum(sum( exp(lnpDandXgivenXl-lnpDandXgivenXl\_max) )) );

lnpXgivenD = lnpDandXgivenXl - lnpD;

obj.Prior = lnpXgivenD;

set(obj.Post,'XData',obj.XterrainMesh,'YData',obj.YterrainMesh,'ZData',exp(lnpXgivenD'),'EdgeColor','none','FaceAlpha',0.5);

view(2)

stop