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Bài Tập Thực Hành 3

Khảo Sát Bộ Dữ Liệu Chữ Số Viết Tay

**Q1.**

function q1(n)

fprintf ('\n Load du lieu train');

imgTrainAll = loadMNISTImages ('./train-images.idx3-ubyte');

lblTrainAll = loadMNISTLabels ('./train-labels.idx1-ubyte');

figure;

img = imgTrainAll(:, n);

img2D = reshape(img,28,28);

strLabelImage = num2str (lblTrainAll (n ));

imshow(img2D);

title (strLabelImage);

end

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| N | 1 | 500 | 5000 | 10000 | 59000 |
| Kết quả | 5 | 8 | 2 | 7 | 4 |

**Q2.**

function q2(n)

fprintf ('\n Load du lieu test');

imgTestAll = loadMNISTImages ('./t10k-images.idx3-ubyte');

lblTestAll = loadMNISTLabels ('./t10k-labels.idx1-ubyte');

figure;

img = imgTestAll(:, n);

img2D = reshape(img,28,28);

strLabelImage = num2str (lblTestAll (n ));

imshow(img2D);

title (strLabelImage);

end

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| N | 1 | 500 | 5000 | 9000 |
| Kết quả | 7 | 6 | 0 | 0 |

**Q3.**

function q3()

fprintf ('\n Load du lieu train');

imgTrainAll = loadMNISTImages ('./train-images.idx3-ubyte');

lblTrainAll = loadMNISTLabels ('./train-labels.idx1-ubyte');

count = 0;

for j=0:9

for i = 1 :length(lblTrainAll)

if lblTrainAll(i) == j

count = count + 1 ;

end

end

fprintf('Nhan [%d] co: %d anh\n', j, count);

count = 0;

end

end

Kết quả:

Nhan [0] co: 5923 anh

Nhan [1] co: 6742 anh

Nhan [2] co: 5958 anh

Nhan [3] co: 6131 anh

Nhan [4] co: 5842 anh

Nhan [5] co: 5421 anh

Nhan [6] co: 5918 anh

Nhan [7] co: 6265 anh

Nhan [8] co: 5851 anh

Nhan [9] co: 5949 anh

Q4.

function q4()

fprintf ('\n Load du lieu test');

imgTestAll = loadMNISTImages ('./t10k-images.idx3-ubyte');

lblTestAll = loadMNISTLabels ('./t10k-labels.idx1-ubyte');

count = 0;

for j=0:9

for i = 1 :length(lblTestAll)

if lblTestAll(i) == j

count = count + 1 ;

end

end

fprintf('Nhan [%d] co: %d anh\n', j, count);

count = 0;

end

end

Kết quả:

Nhan [0] co: 980 anh

Nhan [1] co: 1135 anh

Nhan [2] co: 1032 anh

Nhan [3] co: 1010 anh

Nhan [4] co: 982 anh

Nhan [5] co: 892 anh

Nhan [6] co: 958 anh

Nhan [7] co: 1028 anh

Nhan [8] co: 974 anh

Nhan [9] co: 1009 anh

**Q5.**

function q5(n)

fprintf ('\n Load du lieu test');

imgTestAll = loadMNISTImages ('./t10k-images.idx3-ubyte');

lblTestAll = loadMNISTLabels ('./t10k-labels.idx1-ubyte');

nTestImages = size(imgTestAll, 2 ) ;

img = imgTestAll(:,n);

img2D = reshape(img,28,28);

strLabelImage = num2str (lblTestAll(n));

imshow(img2D);

title(strLabelImage);

end

Kết quả:

|  |  |  |  |
| --- | --- | --- | --- |
| N | 5 | 500 | 900 |
| Kết quả | 4 | 6 | 8 |

**Q6.**

function Q6(n)

fprintf('\n Load du lieu train');

imgTrainAll = loadMNISTImages('./train-images.idx3-ubyte');

lblTrainAll = loadMNISTLabels('./train-labels.idx1-ubyte');

Mdl = fitcknn(imgTrainAll', lblTrainAll);

fprintf('\n Load du lieu test');

imgTestAll = loadMNISTImages('./t10k-images.idx3-ubyte');

lblTestAll = loadMNISTLabels('./t10k-labels.idx1-ubyte');

nTrainImages = size(imgTrainAll, 2);

nTrainLabels = size(lblTrainAll, 1);

nTestImages = size(imgTestAll, 2);

nTestLabels = size(lblTestAll, 1);

imgTest = imgTestAll(:, n);

lblPredictTest = predict(Mdl, imgTest');

lblImgTest = lblTestAll(n);

figure;

img2D = reshape(imgTest, 28, 28);

imshow(img2D);

strLabelImage = "Ban dau ";

strLabelImage = [strLabelImage, num2str(lblTestAll(n)), '.'];

title(strLabelImage);

strLabelImage = [strLabelImage, ' Du doan: '];

strLabelImage = [strLabelImage, num2str(lblPredictTest), '.' ];

if(lblPredictTest == lblImgTest)

strLabelImage = [strLabelImage, ' Ket qua dung. '];

else

strLabelImage = [strLabelImage, ' Ket qua sai. '];

end

title(strLabelImage);

end

**Q6\*.**

**Q7.**