% loadMNISTImages

function images = loadMNISTImages(filename)

%loadMNISTImages returns a 28x28x[number of MNIST images] matrix containing

%the raw MNIST images

fp = fopen(filename, 'rb');

assert(fp ~= -1, ['Could not open ', filename, '']);

magic = fread(fp, 1, 'int32', 0, 'ieee-be');

assert(magic == 2051, ['Bad magic number in ', filename, '']);

numImages = fread(fp, 1, 'int32', 0, 'ieee-be');

numRows = fread(fp, 1, 'int32', 0, 'ieee-be');

numCols = fread(fp, 1, 'int32', 0, 'ieee-be');

images = fread(fp, inf, 'unsigned char');

images = reshape(images, numCols, numRows, numImages);

images = permute(images,[2 1 3]);

fclose(fp);

% Reshape to #pixels x #examples

images = reshape(images, size(images, 1) \* size(images, 2), size(images, 3));

% Convert to double and rescale to [0,1]

images = double(images)/255 ;

end