

```

function [gamma_n, Kc_n] = normalize_Kc(gamma, dim)
% normalize the parameters of a "free-form" covariance function Kc to [-1 1]
%
% inputs are the parameters of a lower triangular matrix L of size [m*k]
%
%      |   gamma_1      0          ...  0          |
% L =   |   gamma_2      gamma_3      ...  0          |
%      |   ...
%      |   gamma_m*k-k  gamma_m*k-k+1  ...  gamma_m*k  | m*k
%
%
%
% Input:
%   gamma   - vector [m*k x 1] containing all parameters
%   dim      - number of tasks / dimensions (here it would be m)
%
% Output:
%   gamma_n - normalized results
%   Kc_n     - normalized matrix Kc
%
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%
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% check if number of valid
num_para = [1:dim];
if sum(num_para) ~= numel(gamma)
    error('number of parameters disagree with dimension');
end

% parametrize initial lower triangular matrix L
L = triu(ones(dim, dim));
[ind] = find(L(:) == 1);

[ind2d(:, 1) ind2d(:, 2)] = find(L == 0);
L(ind) = gamma;
L = L';

% normalize parameter
for cnt = 1:length(gamma)
    gamma_n(cnt) = sqrt(gamma(cnt).^2./sum(L(ind2d(cnt, 2), :).^2))*sign(gamma(cnt));

```

end

% parametrize normalized lower triangular matrix L

L_n = triu(ones(dim,dim));

L_n(ind) = gamma_n;

% compute normalized matrix Kc_n

Kc_n = L_n'*L_n;