

```

1  function K = MTGP_covMask(cov, hyp, x, z, i)
2
3  % Apply a covariance function to a subset of the dimensions only. The subset can
4  % either be specified by a 0/1 mask by a boolean mask or by an index set.
5  %
6  % This function doesn't actually compute very much on its own, it merely does
7  % some bookkeeping, and calls another covariance function to do the actual work.
8  %
9  % The function was suggested by Iain Murray, 2010-02-18 and is based on an
10 % earlier implementation of his dating back to 2009-06-16.
11 %
12 % Copyright (c) by Carl Edward Rasmussen and Hannes Nickisch, 2012-11-17.
13 %
14 % See also COVFUNCTIONS.M.
15
16 mask = fix(cov{1}(:)); % either a binary mask or an index set
17 cov = cov{2}; % covariance function to be masked
18 if iscell(cov{:}), cov = cov{:}; end % properly unwrap nested cell arrays
19 nh_string = feval(cov{:}); % number of hyperparameters of the full covariance
20
21 if max(mask)<2 && length(mask)>1, mask = find(mask); end % convert 1/0->index
22 D = length(mask); % masked dimension
23 if nargin<3, K = num2str(eval(nh_string)); return, end % number of parameters
24 if nargin<4, z = []; end % make sure, z exists
25 xeqz = isempty(z); dg = strcmp(z,'diag'); % determine mode
26
27 if eval(nh_string)~=length(hyp) % check hyperparameters
28     error('number of hyperparameters does not match size of masked data')
29 end
30 if size(x,2) > 1
31     nL = max(x(:,end));
32 end
33 if nargin<5 % covariances
34     if dg
35         K = feval(cov{:}, hyp, x(:,mask), 'diag');
36     else
37         if xeqz
38             K = feval(cov{:}, hyp, x(:,mask));
39         else
40             K = feval(cov{:}, hyp, x(:,mask), z(:,mask));
41         end
42     end
43 else % derivatives
44     if i <= eval(nh_string)
45         if dg
46             K = feval(cov{:}, hyp, x(:,mask), 'diag', i);
47         else
48             if xeqz
49                 K = feval(cov{:}, hyp, x(:,mask), [], i);
50             else
51                 K = feval(cov{:}, hyp, x(:,mask), z(:,mask), i);
52             end
53         end
54     else
55         error('Unknown hyperparameter')
56     end
57 end

```