# APPENDIX D
# THE FUNCTION RLS

```
function h = rls(varargin)
%RLS  Recursive least-squares FIR adaptive filter.
%   H = ADAPTFILT.RLS(L,LAMBDA,INVCOV,COEFFS,STATES) constructs an FIR
%   RLS adaptive filter H.
%
%   L is the adaptive filter length (the number of coefficients or taps)
%   and it must be a positive integer. L defaults to 10.
%
%   LAMBDA is the RLS forgetting factor. This is a scalar and should lie
in
%   the range (0, 1]. LAMBDA defaults to 1.
%
%   INVCOV is the inverse of the input signal covariance matrix.  This
%   matrix should be initialized to a positive definite matrix.
%
%   COEFFS vector of initial filter coefficients. It must be a length L
%   vector. COEFFS defaults to length L vector of all zeros.
%
%   STATES vector of initial filter States. It must be a length L-1
vector.
%   STATES defaults to a length L-1 vector of all zeros.
%
%
%   See also ADAPTFILT/ALGORITHMS.

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h = adaptfilt.rls;
construct(h,[0 5],'Direct-Form FIR RLS Adaptive Filter',varargin{:});
```