Abstract—The performance of the recursive least-squares (RLS) algorithm is governed by the forgetting factor. This parameter leads to a compromise between 1) the tracking capabilities and 2) the misadjustment and stability. In this letter, a variable forgetting factor RLS (VFF-RLS) algorithm is proposed for system identification. In general, the output of the unknown system is corrupted by a noise-like signal. This signal should be recovered in the error signal of the adaptive filter after this one converges to the true solution. This condition is used to control the value of the forgetting factor. The simulation results indicate the good performance and the robustness of the proposed algorithm.