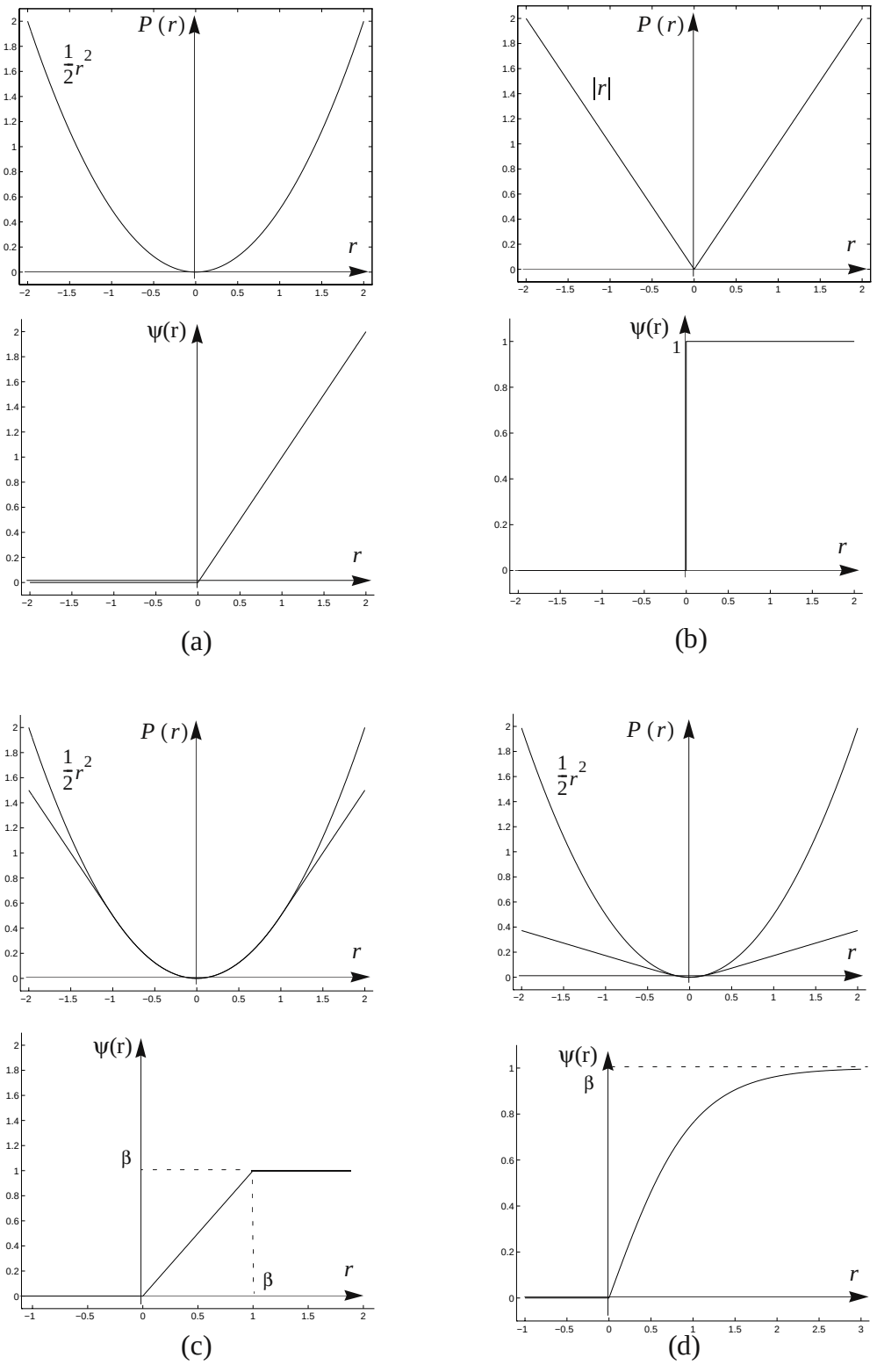
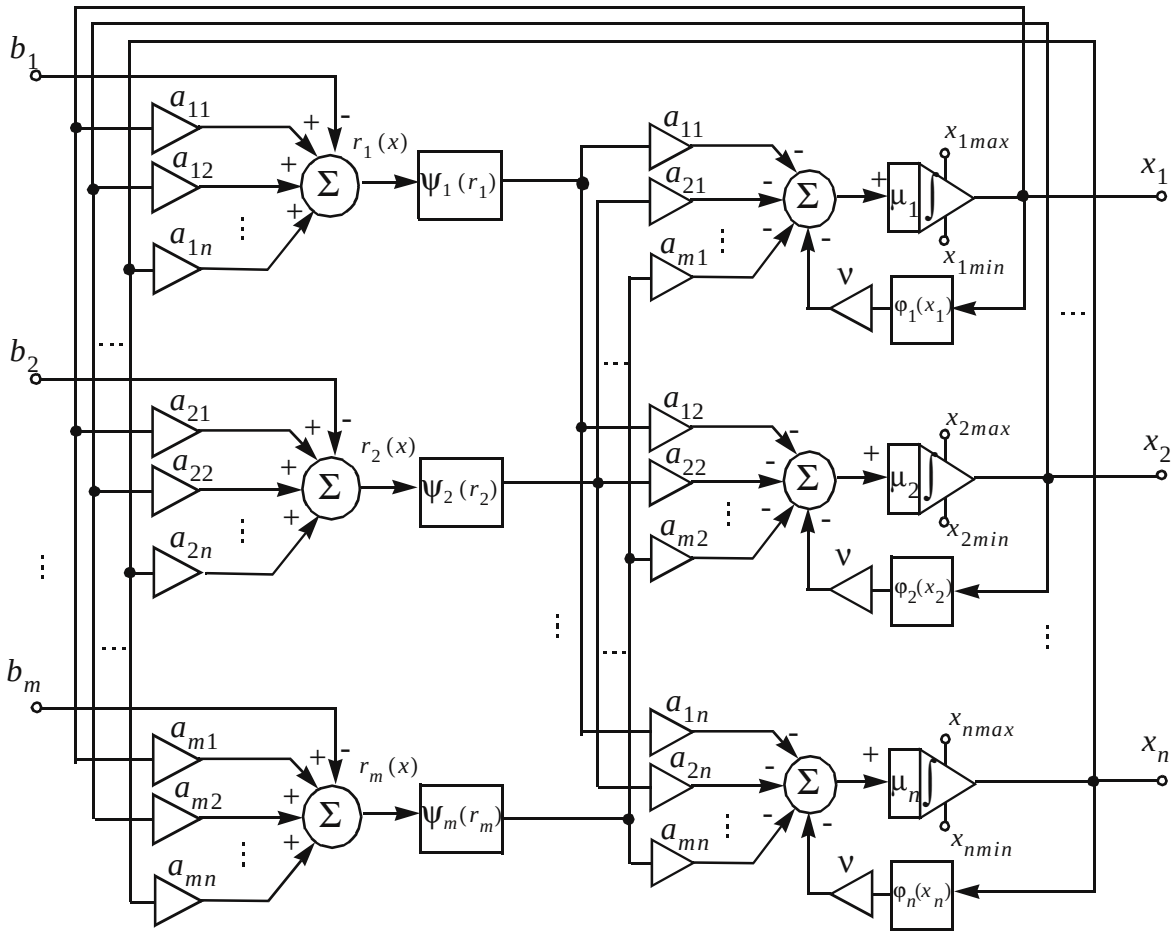
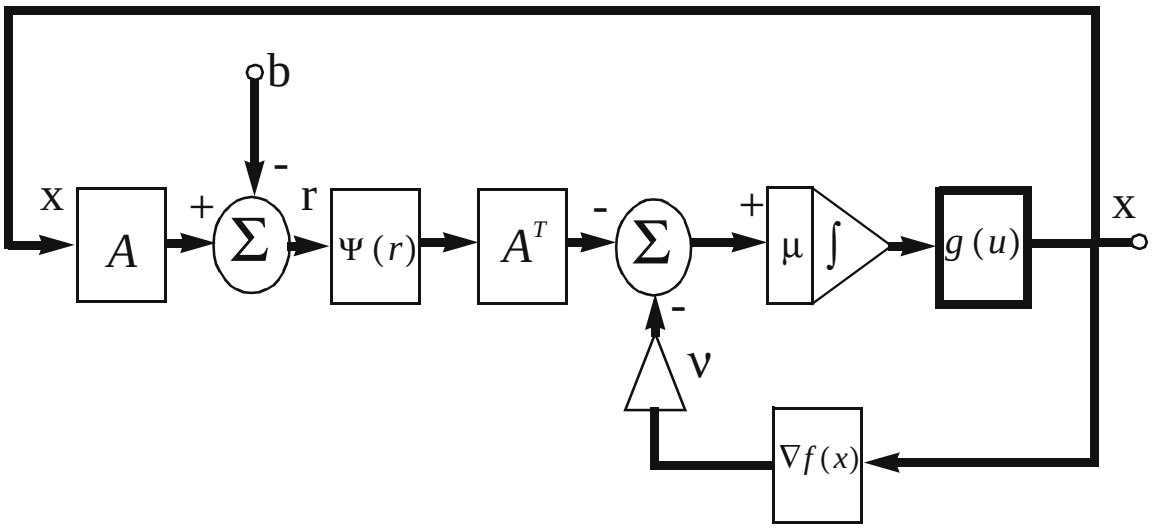


(a) Quadratic function
(b) Absolute values function
(c) Huber's function
(d) Logistic function

Figure 1: Penalty functions



(a)



(b)

(a) Detailed neural network
(b) Aggregated neural network

Figure 2: Neural network using penalty function approach

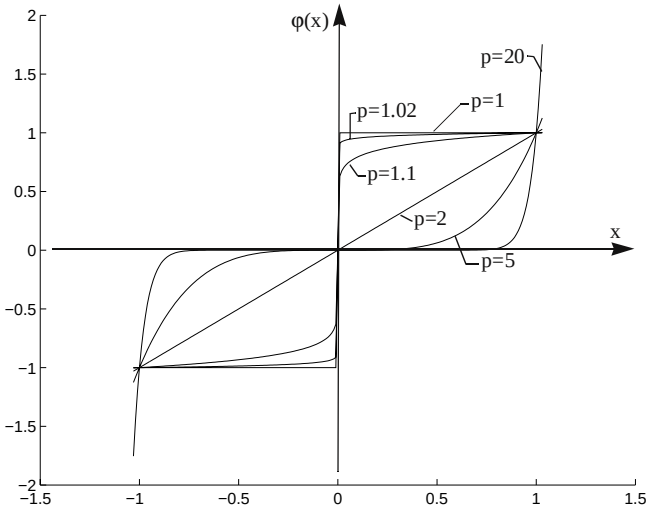


Figure 3: Exemplary plots of the activation function

$$\varphi(x_j) = \frac{\partial}{\partial x_j} f(\mathrm{x}) \quad \textit{with} \quad f(\mathrm{x}) = \frac{1}{p}\|\mathrm{x}\|_p^{\,p}$$

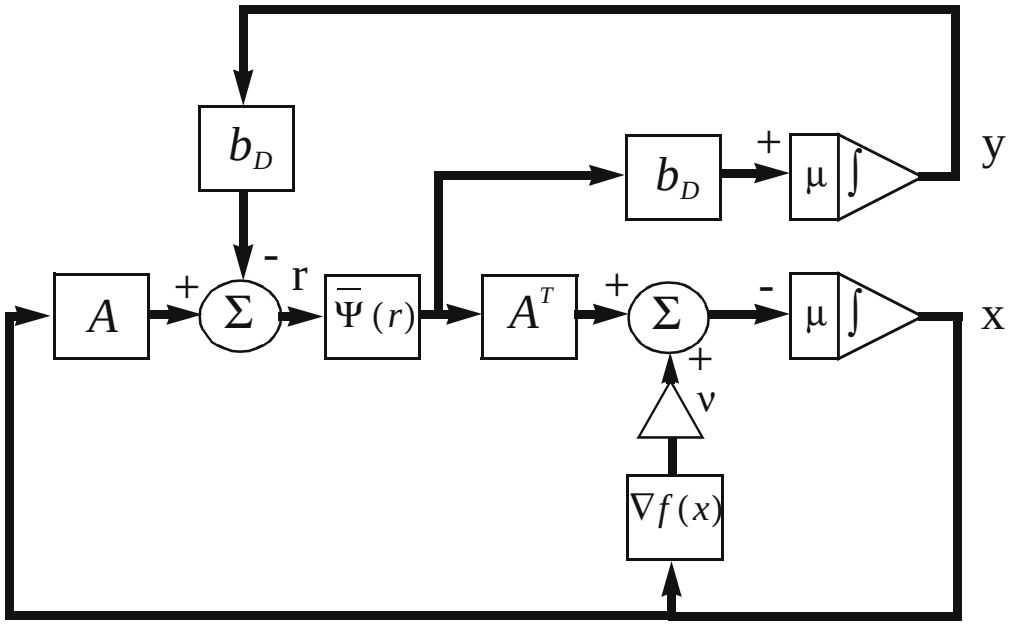
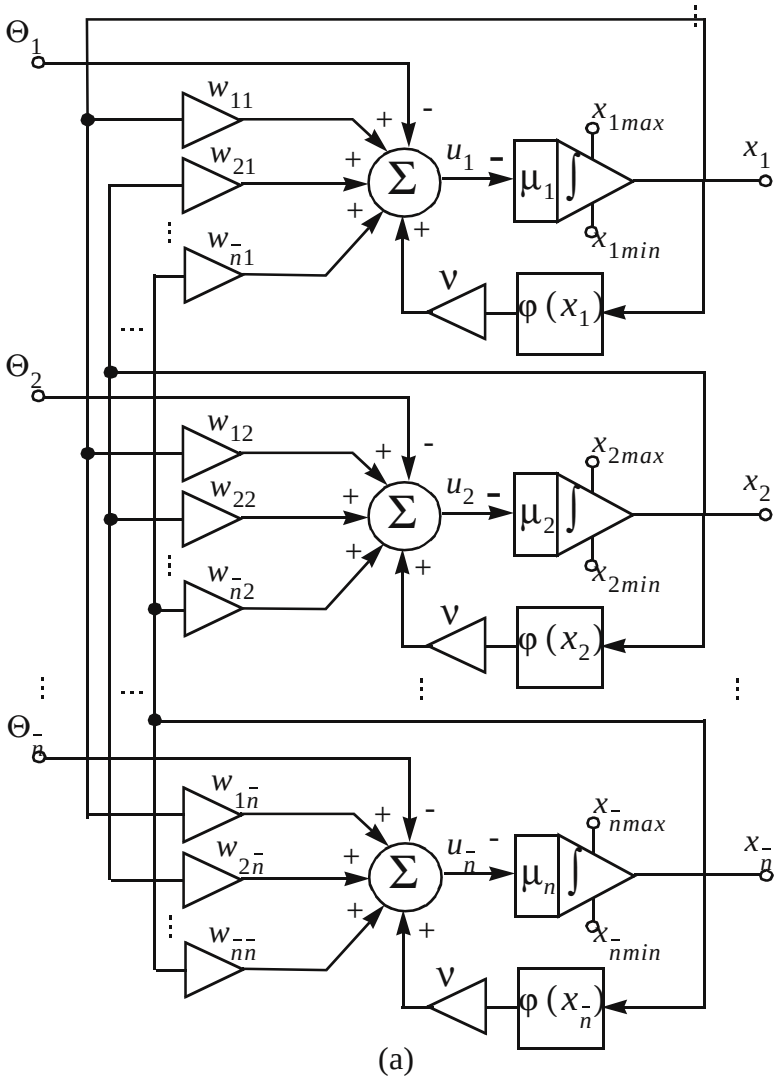
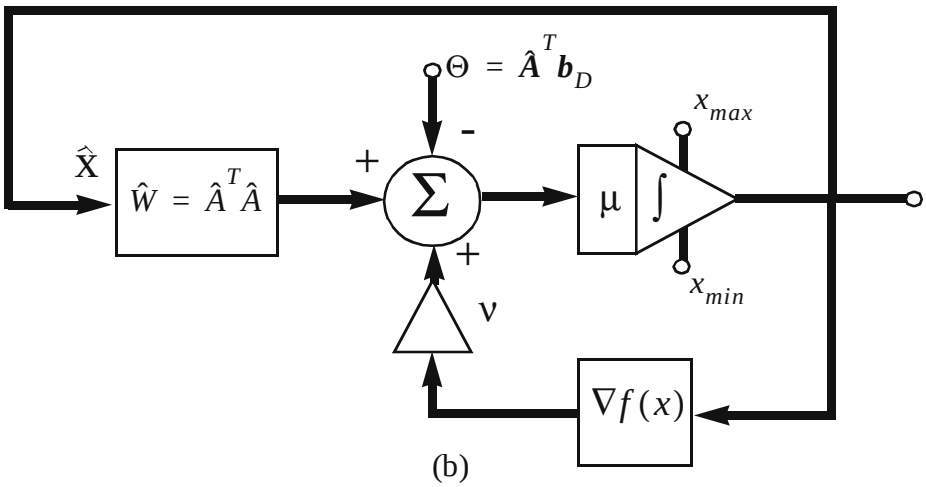


Figure 4: Neural network implementing transformation of inequality constrains into equality constrains



(a)



(b)

(a) Detailed neural network
(b) Aggregated neural network

Figure 5: Simplified neural network implementing transformation of inequality constrains into equality constrains

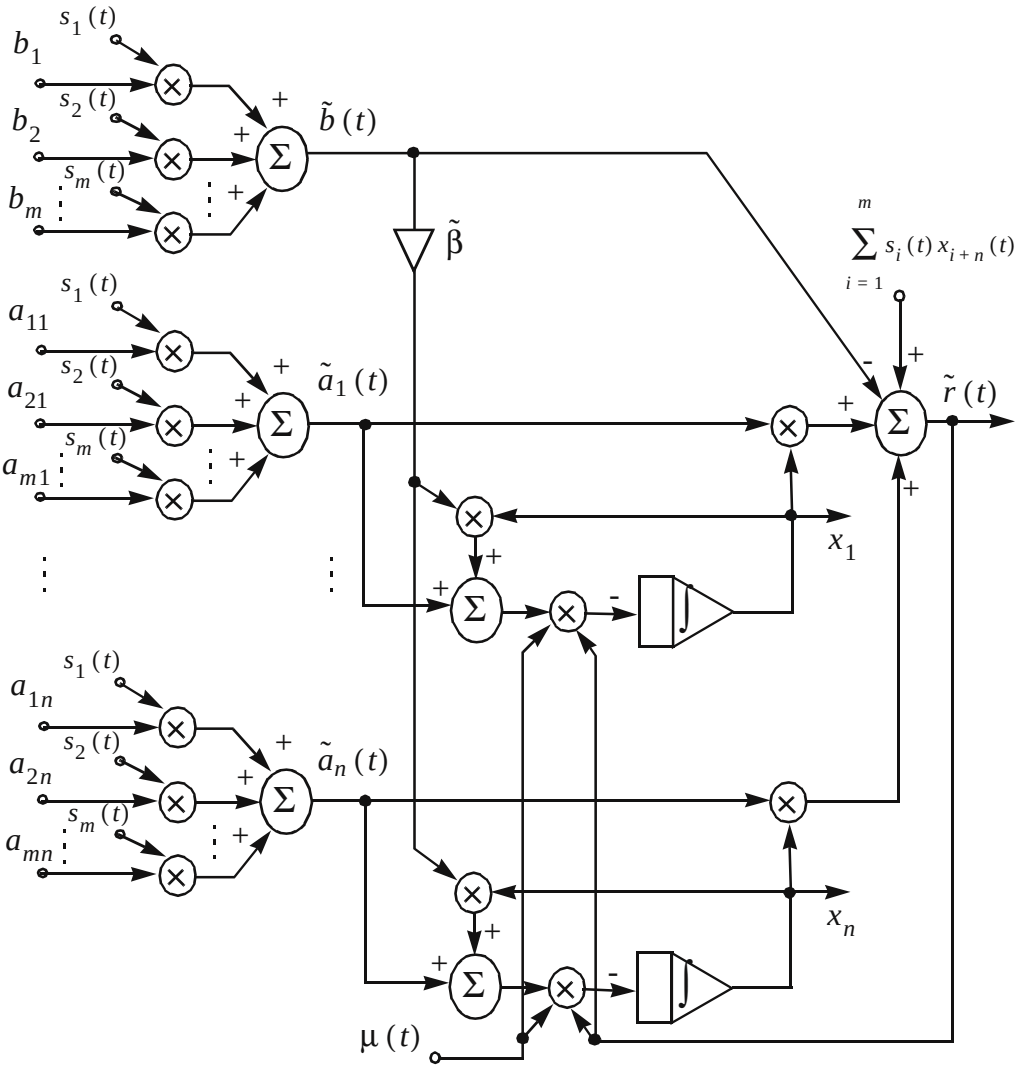
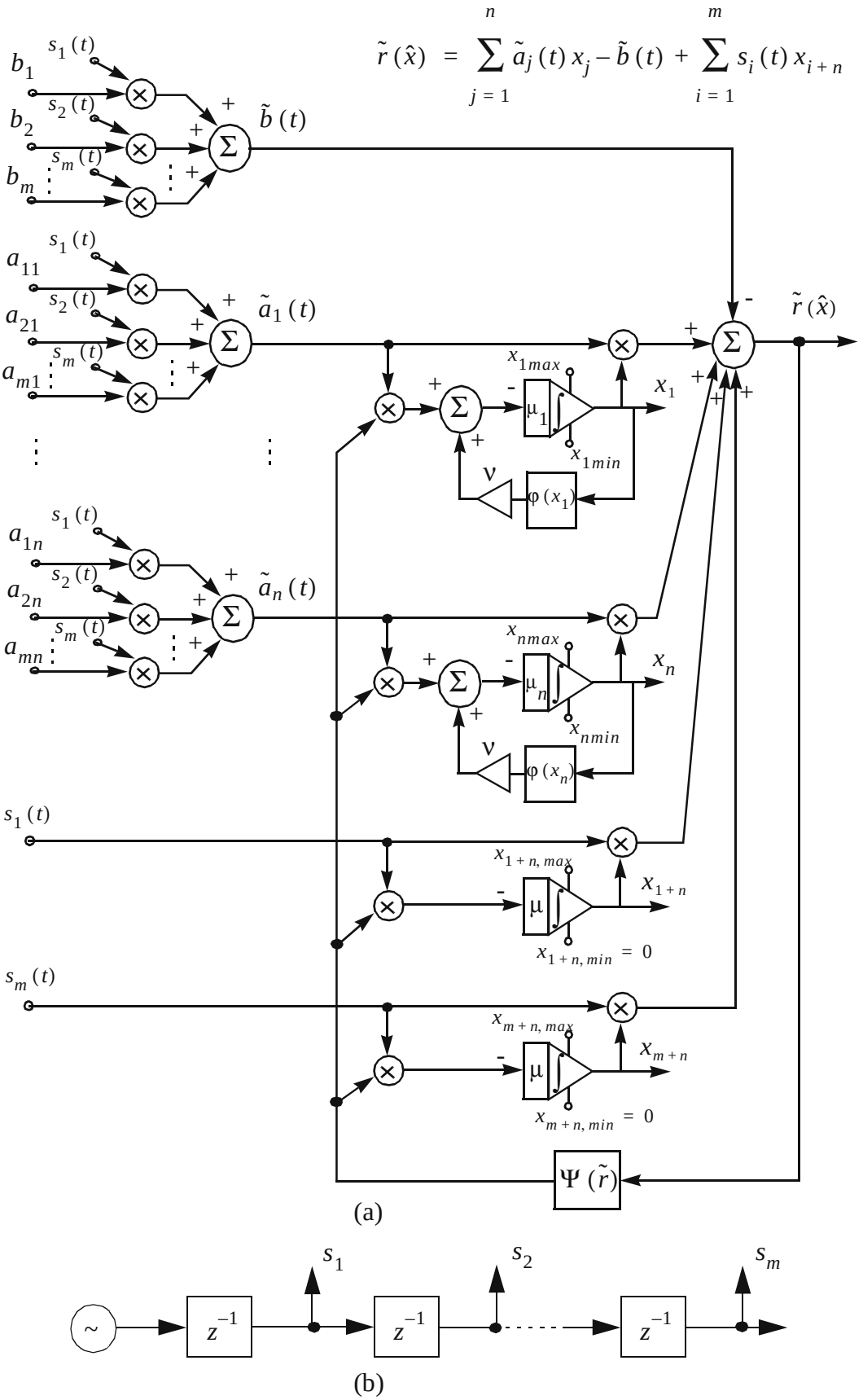


Figure 7: Generalised neural network implementing the regularised total least squares (RTLS) (for $\nu = 0$ *)*



(a) Neuron with adaptive synaptic weights
(b) Unit delays

Figure 6: Neural network using random perturbation signal

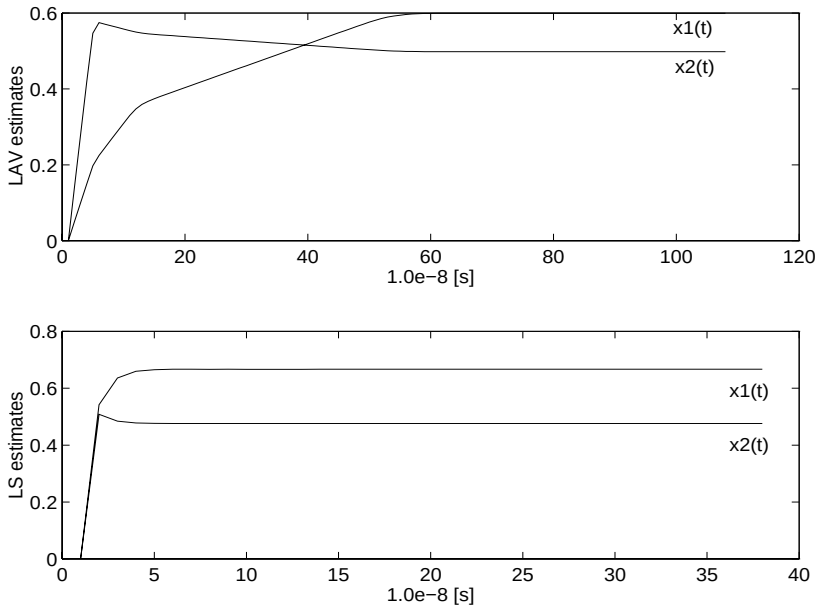


Figure 8: LAV and LS estimates obtained using the neural network of Figure 2

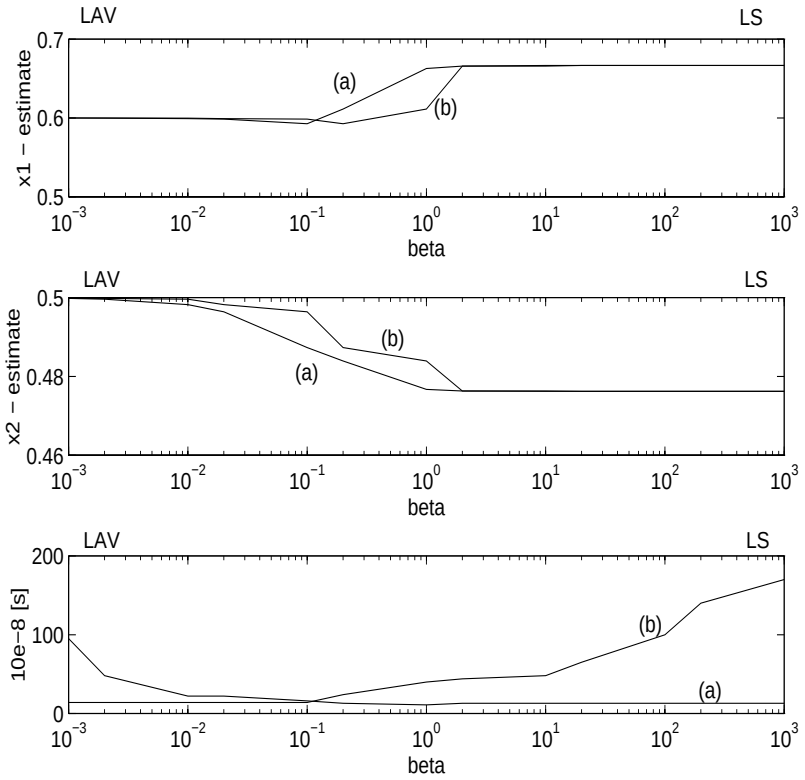


Figure 9: Dependence of the neural network solution on the value of the parameter β in the penalty function and the effect of using different penalty functions (a) - Eq.(8d) and (b) - Eq. (48).

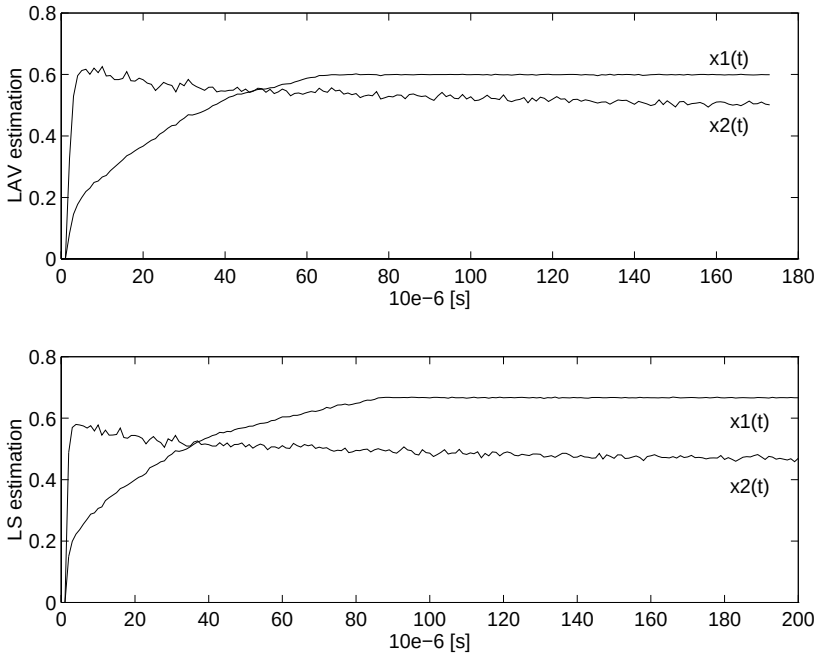


Figure 10: LAV and LS estimates obtained using the neural network of Figure 6.

LIST OF FIGURES