Adaptive MCMC algorithm with normal proposal and vanishing adaptation

1: Set starting values X_0, μ_0, Σ_0, λ_0, α^*, δ ($\delta > 0$), and draws T.
2: Set $t = 0$ and repeat steps 3–10 while $t \leq T$:
    3: Draw a candidate $Y_t \sim MVN(X_t, \lambda_t \Sigma_t)$.
    4: Compute $\alpha(Y_t, X_t) = \min\left\{\frac{\pi(Y_t)}{\pi(X_t)}, 1\right\}$.
    5: Set $X_{t+1} = Y_t$ with prob. $\alpha(Y_t, X_t)$,
        $X_{t+1} = X_t$ otherwise.
    6: Compute weighting parameter $\gamma_t = \frac{1}{(1+t)^\delta}$.
    7: Update $\lambda_{t+1} = \exp\left\{\gamma_t \left(\alpha(Y_t, X_t) - \alpha^*\right)\right\} \lambda_t$.
    8: Update $\mu_{t+1} = \mu_t + \gamma_t (X_{t+1} - \mu_t)$.
    9: Update $\Sigma_{t+1} = \Sigma_t + \gamma_t \left\{(X_{t+1} - \mu_t)(X_{t+1} - \mu_t)' - \Sigma_t\right\}$.
    10: Increment t.
Output: The sequence $(X_t)_{t=1}^T$.