Minimization of $J_{x^{(t)}}(x)$

Intialization: $x_0 = D_{x^{(t)}}^{1/2} x^{(t)}$

Compute $\tilde{A}_{x^{(t)}}$ from $A_{x^{(t)}}$

$$d_0 = -g_0 = -\nabla J_{x^{(t)}}(x_0) = -\left(\tilde{A}_{x^{(t)}} x_0 - D_{x^{(t)}}^{-1/2}\left(h^T * D\right)\right)$$

Iteration:

$$x_{k+1} = x_k + \alpha_k d_k, \quad \alpha_k = -\frac{\left\langle g_k, d_k \right\rangle}{\left\langle d_k, \tilde{A}_{x^{(t)}} d_k \right\rangle}$$

$$d_{k+1} = -g_{k+1} + \beta_k d_k, \quad \beta_k = \frac{\left\langle d_{k+1}, \tilde{A}_{x^{(t)}} d_k \right\rangle}{\left\langle d_k, \tilde{A}_{x^{(t)}} d_k \right\rangle}$$

where $g_k = -\left(\tilde{A}_{x^{(t)}} x_k - D^{-1/2}\left(h^T * D\right)\right)$

Output after N iterations: $x^{(t+1)} = D_{x^{(t)}}^{-1/2} x_N$