

$$\frac{\mu_f}{2} d(x_k^i, \mathcal{X}_{k_k^i}^f)^2 \leq f_k(x) - f_k^* \leq \frac{L_f}{2} d(x_k^i, \mathcal{X}_{k_k^i}^2)^2, \quad (6)$$