$$\begin{array}{llll}
\text{iter } 1 & \nabla f(\boldsymbol{\alpha}) \to (i,j) & \nabla f(\boldsymbol{\alpha}) \searrow (i_1,j_1) \\
\text{iter } 2 & \nabla f(\boldsymbol{\alpha}) \to (i,j) & \searrow (i_2,j_2) \\
\vdots & \vdots & \vdots & \searrow \vdots \\
\text{iter } r & \nabla f(\boldsymbol{\alpha}) \to (i,j) & (i_r,j_r)
\end{array}$$