
Algorithm 2 Approximate gradient descent on $\text{SO}(n)$

procedure GRADIENTDESCENTSON(f, A_0, γ) ▷ Descend on f starting at A_0 with step size $\gamma > 0$
 repeat
 $X_k \leftarrow \text{PROJSON}(A_k, \nabla f(A_k))$ ▷ ∇f is the Euclidean gradient
 $(A_{k+1}, P_{k+1}) \leftarrow \text{POLARDECOMP}(X_k)$
 $k \leftarrow k + 1$
 until Converged
 return A_k
end procedure
