

SFFS Algorithm

Input:

$$Y = \{y_j \mid j = 1, \dots, D\} \quad // \text{available measurements} //$$

Output:

$$X_k = \{x_j \mid j = 1, \dots, k, x_j \in Y\}, \quad k = 0, 1, \dots, D$$

Initialisation:

$$X_0 := \emptyset; \quad k := 0$$

(in practice one can begin with $k = 2$ by applying SFS twice)

Termination:

Stop when k equals the number of features required

Step 1 (*Inclusion*)

$$x^+ := \arg \max_{x \in Y - X_k} J(X_k + x) \quad \begin{cases} \text{the most significant feature} \\ \text{with respect to } X_k \end{cases}$$

$$X_{k+1} := X_k + x^+; \quad k := k + 1$$

Step 2 (*Conditional Exclusion*)

$$x^- := \arg \max_{x \in X_k} J(X_k - x) \quad \begin{cases} \text{the least significant} \\ \text{feature in } X_k \end{cases}$$

if $J(X_k - \{x^-\}) > J(X_{k-1})$ then

$$X_{k-1} := X_k - x^-; \quad k := k - 1$$

go to **Step 2**

else

go to **Step 1**