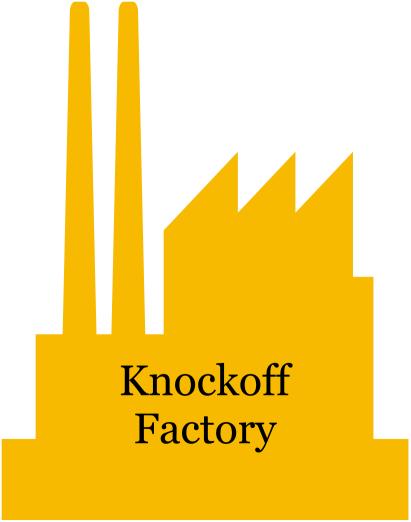
## Model-X knockoffs





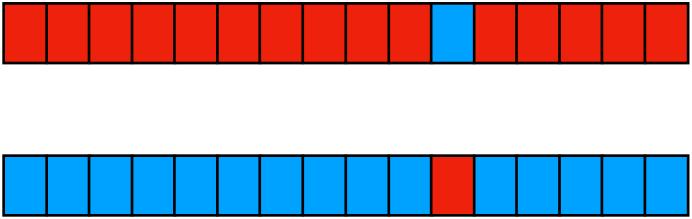


## Knockoff definition (pairwise exchangeability)

the 2p-dimensional distribution stays unchanged

Swapping  $X_i$  with  $X_i$  for any j,

#### Candès, Fan, Janson and Lv (2018)







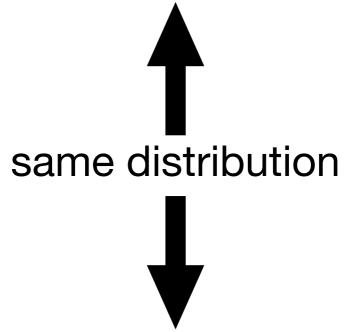
### original features X

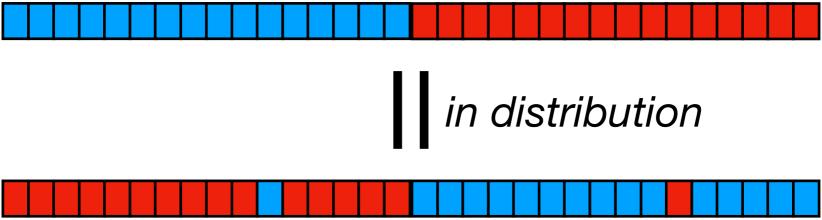
### knockoff features X





#### swap





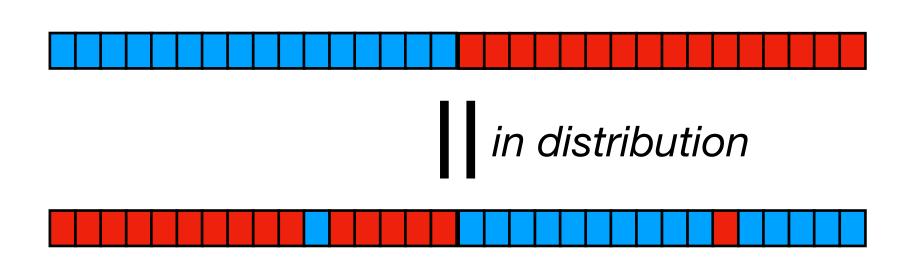
# Model-X knockoffs

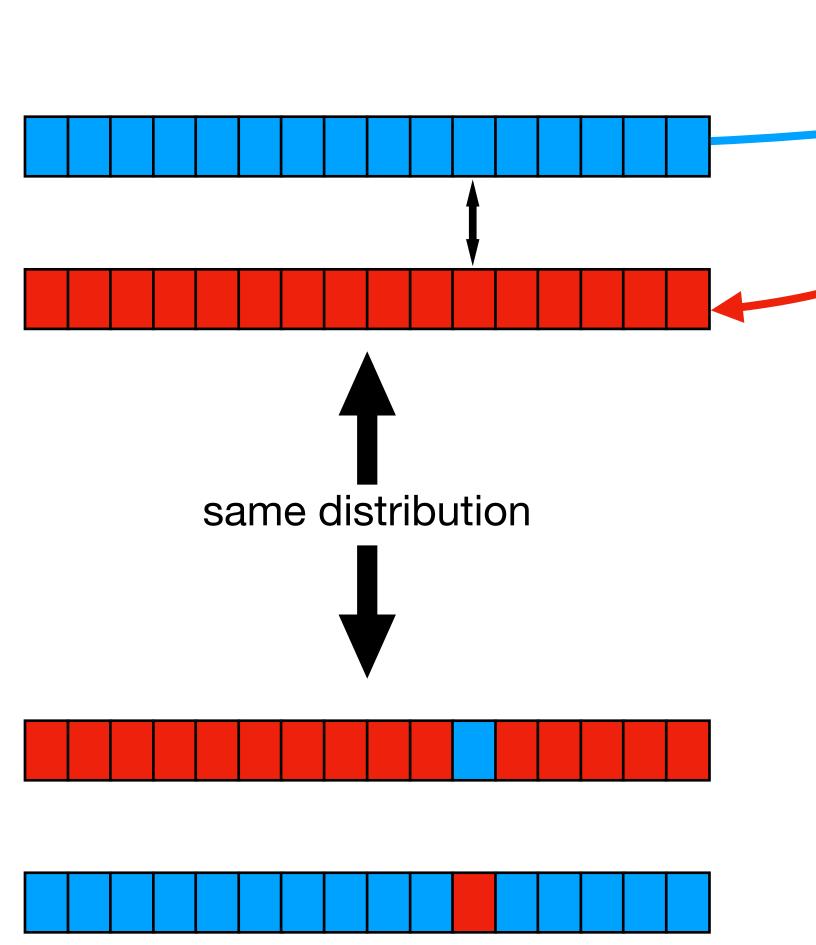
original features X

knockoff features  $ilde{X}$ 



Swapping  $X_j$  with  $\tilde{X}_j$  for any j, the 2p-dimensional distribution stays unchanged





Knockoff

Factory

# Model-X knockoffs

your lab



