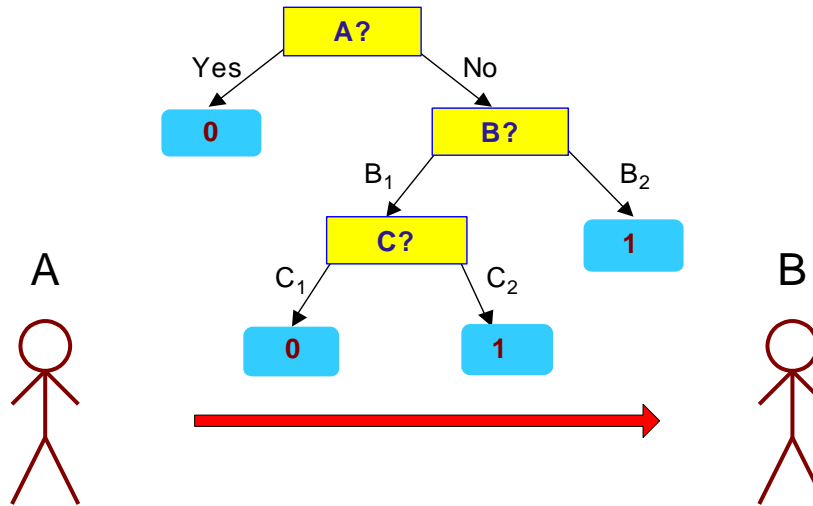


# Minimum Description Length (MDL)

X	y
X <sub>1</sub>	1
X <sub>2</sub>	0
X <sub>3</sub>	0
X <sub>4</sub>	1
...	...
X <sub>n</sub>	1



X	y
X <sub>1</sub>	?
X <sub>2</sub>	?
X <sub>3</sub>	?
X <sub>4</sub>	?
...	...
X <sub>n</sub>	?

- $\text{Cost}(\text{Model}, \text{Data}) = \text{Cost}(\text{Data}|\text{Model}) + \alpha \times \text{Cost}(\text{Model})$ 
  - Cost is the number of bits needed for encoding.
  - Search for the least costly model.
- $\text{Cost}(\text{Data}|\text{Model})$  encodes the misclassification errors.
- $\text{Cost}(\text{Model})$  uses node encoding (number of children) plus splitting condition encoding.