

The background of the slide features a complex geometric pattern composed of numerous triangles in shades of gray, light blue, and dark blue. Interspersed among these triangles are several icons: a magnifying glass in the top right, a person silhouette in the bottom left, and a speech bubble in the bottom right.

# Neural Network

(20241209)

HW6 – Classification of industry  
process by ART-1





## Classification of industrial process

- The behavior of an industrial process can be analyzed by taking into consideration several variables related to the phases of the process.
- There are 10 different situations of the system behavior from 16 status variables  $\{x_1, x_2, \dots, x_{16}\}$ .
- The purpose of applying ART-1 is that **classifies** and **groups** similar situations into classes.

## Training set for the ART-1 network

	$x_1$	$x_2$	$x_3$	$x_4$	$x_5$	$x_6$	$x_7$	$x_8$	$x_9$	$x_{10}$	$x_{11}$	$x_{12}$	$x_{13}$	$x_{14}$	$x_{15}$	$x_{16}$
Situation 1	0	1	0	1	1	0	1	0	1	1	0	1	1	1	1	1
Situation 2	1	0	1	0	1	1	1	1	1	1	1	0	1	0	0	0
Situation 3	1	0	1	1	1	1	1	0	1	1	0	1	1	0	1	1
Situation 4	1	1	1	0	1	0	1	0	1	1	1	1	0	1	0	0
Situation 5	0	0	1	1	1	1	1	1	0	1	1	0	0	0	0	1
Situation 6	1	1	0	1	0	0	1	0	1	1	0	1	1	1	1	1
Situação 7	1	0	1	0	1	1	0	1	1	1	1	0	1	1	1	0
Situação 8	1	0	1	1	1	1	1	0	1	1	0	1	1	0	1	1
Situação 9	0	1	1	0	1	0	1	0	1	1	0	1	0	1	0	1
Situação 10	0	0	1	1	1	1	1	1	0	1	1	0	0	0	0	1



## 作業內容

- 包含：
  - 程式碼說明：說明程式如何設計與實作方式
  - 執行結果：成果截圖
  - 測試資料：如投影片所附
  - 成果說明：說明不同初始number of neuron in  $F^{(2)}$  layer、不同Vigilance parameter ( $\rho$ )的影響、顯示對應不同輸入資料的weight vector狀態(e.g. update/remove/add)、最終分類的結果
  - 心得：
- Deadline:
  - 12/16