

# Machine Learning Foundations

## (機器學習基石)



### Lecture 6+ $\epsilon$ : Supplementary—From Break Point to VC Dimension

Hsuan-Tien Lin (林軒田)

htlin@csie.ntu.edu.tw

Department of Computer Science  
& Information Engineering

National Taiwan University  
(國立台灣大學資訊工程系)



## Break Point and VC Dimension

$N$	1	2	3	4	5	...
$m_{\mathcal{H}}(N)$	2	4	8	14	22	...
			$d_{VC}$	BP	BP	BP

- BP (i.e.  $N > d_{VC}$ ): # dichotomies of **any**  $N$  points  $< 2^N$
- $N \leq d_{VC}$ : # dichotomies of **some**  $N$  points  $= 2^N$  [shatter!!]