① 確定情境

1. supervised learning
2. semi-supervised learning : Generative model
   1. low-density separation assumption (非黑即白)
   2. smothness assumption (近朱者赤，近墨者黑)
   3. better representation (去蕪存菁，化繁為簡)
3. unsupervised learning : linear method
   1. 化繁為簡
      1. clustering : K-means · HAC
      2. dimension reduction : PCA
   2. 無中生有
      1. Generation : Generative model
         1. PixelRNN
         2. VAE
         3. GAN
            - Generator (獵物)
            - Discriminator (獵人)
4. transfer learning :

		Source data	
		labelled	unlabelled
Target data	labelled	1. Fine-tuning (Case 1) 2. Multitask learning	1. self-taught learning (Case 3)
	unlabelled	1. Domain-adversarial training (Case 2) 2. zero-shot learning	1. self-taught clustering (Case 4)

5. reinforcement learning
   1. Policy-based approach (Actor)
   2. Value-based approach (Critic) → Q-learning · DQN · Dueling DQN

   1 + 2 = Actor-Critic method

A3C = Asynchronous + Advantage + Actor-Critic method