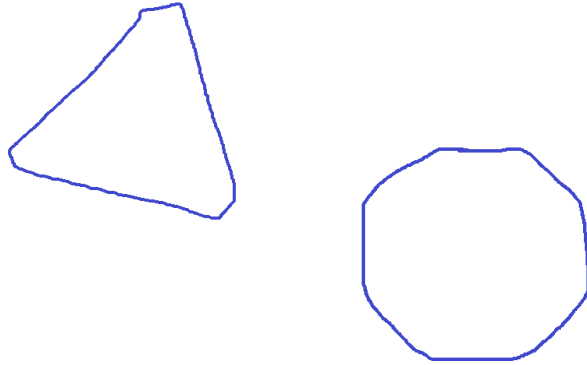




What is AI?

Understand Core Concept of
AI, ML, DL, CBR, LLM
Applications
Opportunities

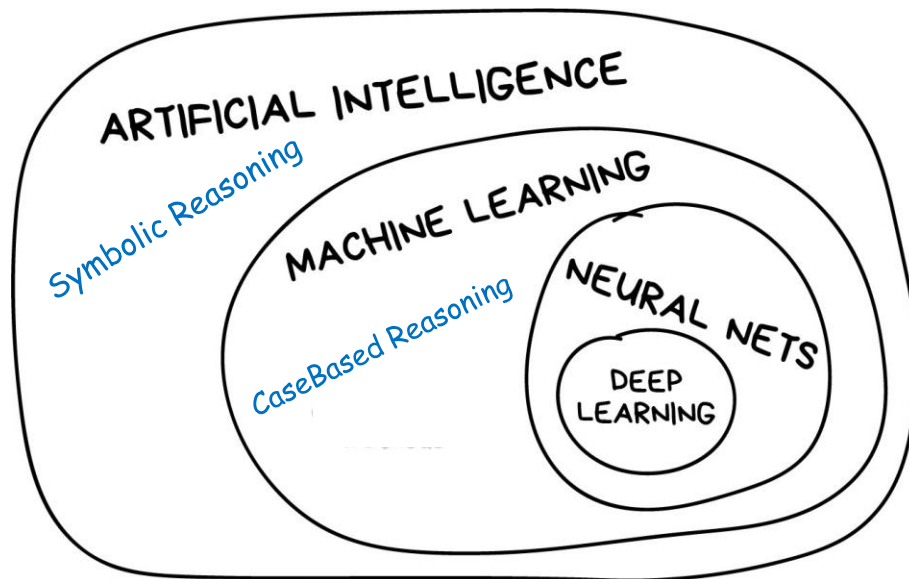
haesung kim
knowhow+
haesung.github.io



- What is being Intelligent?
 - Marvin Minsky 1970

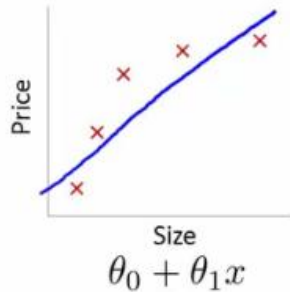
NOT EASY !

- Cannot Code
- Learn from Data

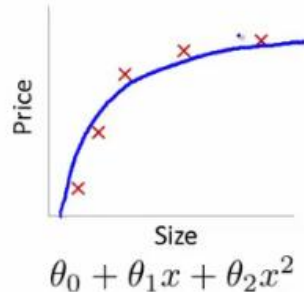


- Hard Areas
 - Reasoning 추론
 - Prediction 예측
 - Classification 분류
 - Creation 생성 (LLM)

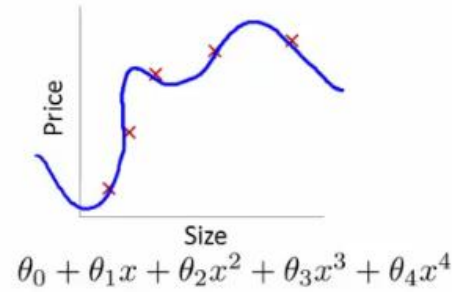
Machine Learning Core Concept



High bias
(underfit)



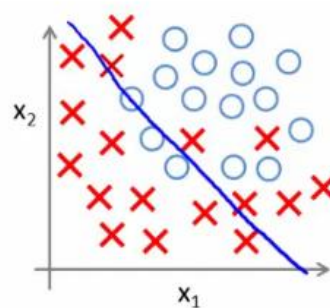
"Just right"



High variance
(overfit)

House Price
Prediction

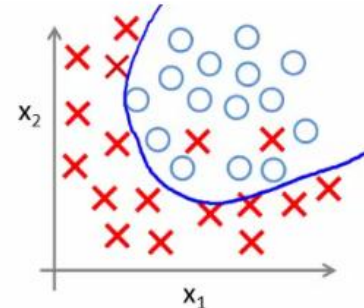
Hypertension
Classification



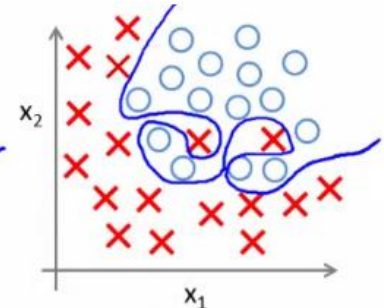
$$h_{\theta}(x) = g(\theta_0 + \theta_1 x_1 + \theta_2 x_2)$$

(g = sigmoid function)

UNDERFITTING
(high bias)

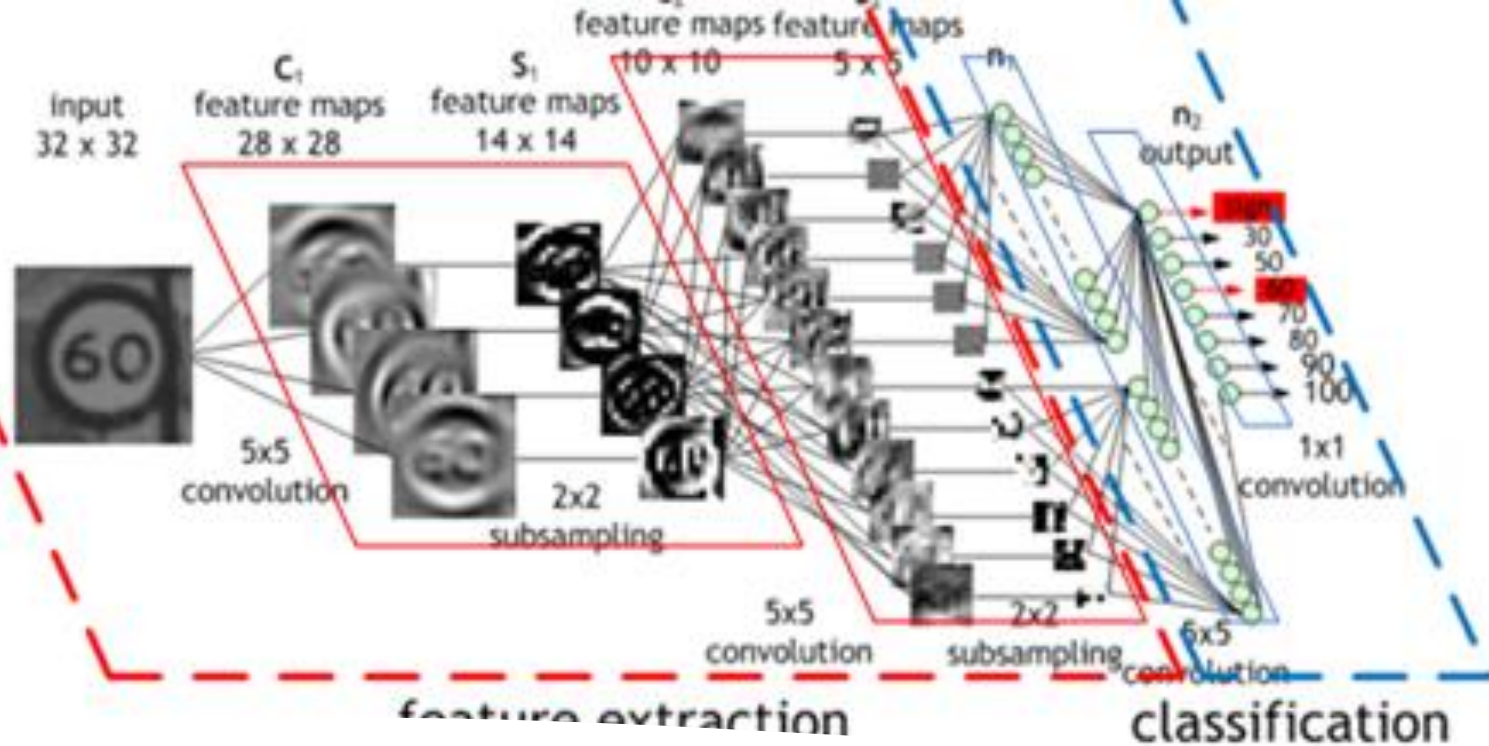


$$g(\theta_0 + \theta_1 x_1 + \theta_2 x_2 + \theta_3 x_1^2 + \theta_4 x_2^2 + \theta_5 x_1 x_2)$$



$$g(\theta_0 + \theta_1 x_1 + \theta_2 x_1^2 + \theta_3 x_1^2 x_2 + \theta_4 x_1^2 x_2^2 + \theta_5 x_1^2 x_2^3 + \theta_6 x_1^3 x_2 + \dots)$$

OVERFITTING
(high variance)



Why Deep Learning is Popular

- New fancy word of Neural Net
 - Fast = cheap graphic cards (Nvidia)
 - Data = huge tagged data
 - Easy = CNN (auto feature extraction)
- Vision
 - 97% accuracy better than human expert 95%
 - <http://cs231n.stanford.edu/>

CBR (Case-Based Reasoning, 사례기반추론)

사람이 문제를 해결하기 위하여 추론하는 프로세스를 모델링 한 방법 (Bergmann)

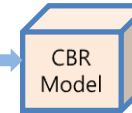


CBR (맞춤형 비만관리 시스템)



비만 여부	시술 부위	연령	대사 질환
[Y] [N]	팔 다리 [복부] 없음	<=29 [30-49] 50-69 >=70	고혈압 당뇨 이상지질 [없음]

CBR Query



유사도 검색



유사도가 가장 높은 1, 2등
치료사례 2건

최종비만치료사례(CASE-12 및 CASE-320 리뷰 및 개선 결과)

비만 여부	시술 부위	연령	대사 질환	
[Y] [N]	팔 다리 [복부] 없음	<=29 [30-49] 50-69 >=70	고혈압 당뇨 이상지질 [없음]	<ul style="list-style-type: none"> 47세 여성환자 4주 시술 및 약물처방 개선 추이

CASE-12
유사도 95%

비만 여부	시술 부위	연령	대사 질환	
[Y] [N]	팔 다리 [복부] 없음	<=29 [30-49] 50-69 >=70	[고혈압] 당뇨 이상지질 없음	<ul style="list-style-type: none"> 42세 여성환자 4주 시술 및 약물처방 개선 추이

CASE-85
유사도 90%

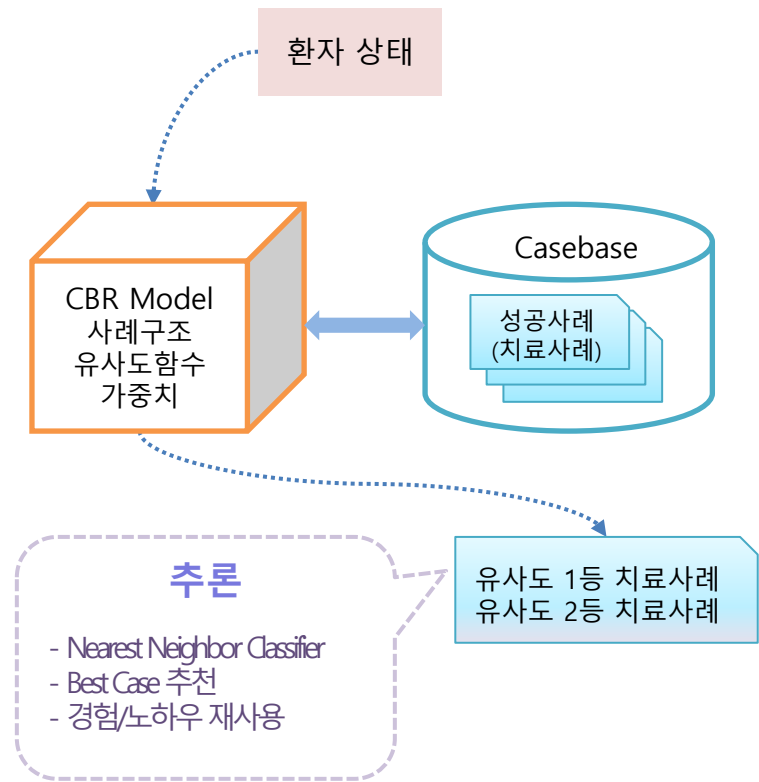
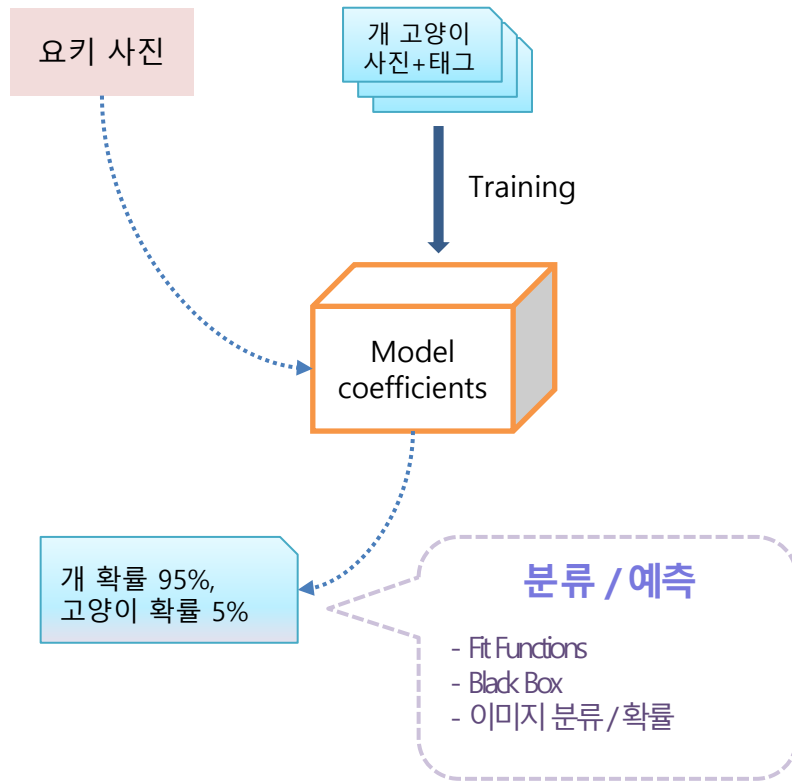
비만 여부	시술 부위	연령	대사 질환	
[Y] [N]	팔 다리 [복부] 없음	<=29 30-49 [50-69] >=70	고혈압 당뇨 이상지질 [없음]	<ul style="list-style-type: none"> 55세 남성환자 4주 시술 및 약물처방 개선 추이

CBR 추론속성

해결책 / know-how

비만 치료 결과 효과적인
시술 및 약물처방으로 판명되면
Casebase에 치료사례로 등록

DL vs CBR

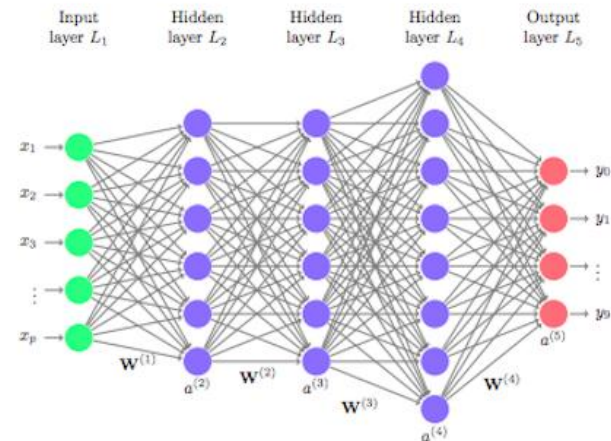
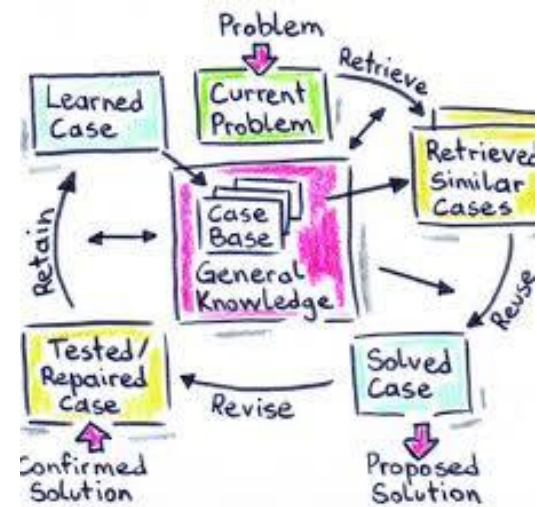


Quiz DL/CBR/Rule?

1. Metabolic Syndrome Detection
대사증후군판정


2. Cancer Detection &
Personalized Treatment
암 조기발견 및 개인맞춤형치료

3. My Home Finder
스마트직방



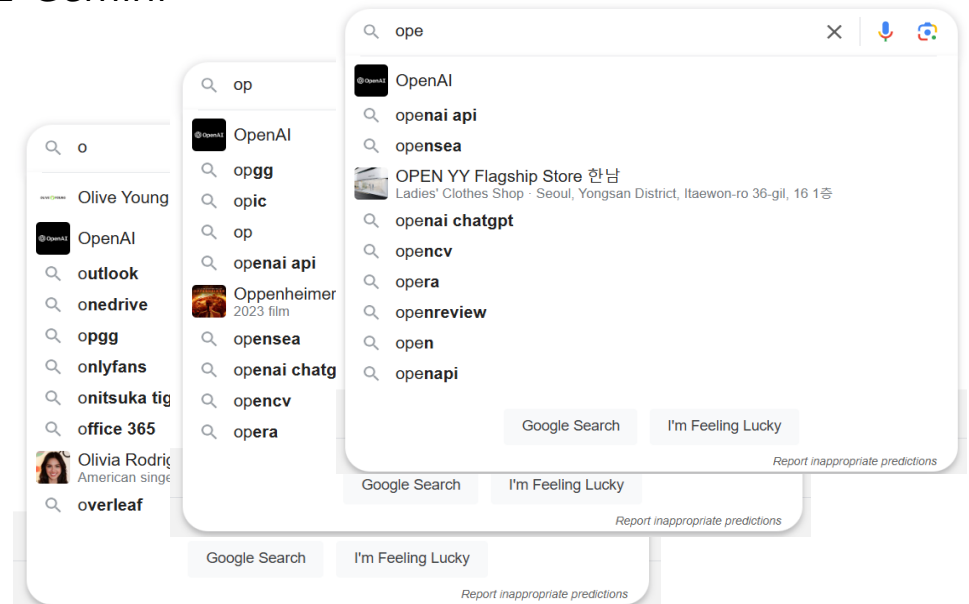
LLM (Large Language Model)

- Why is so Shocking?

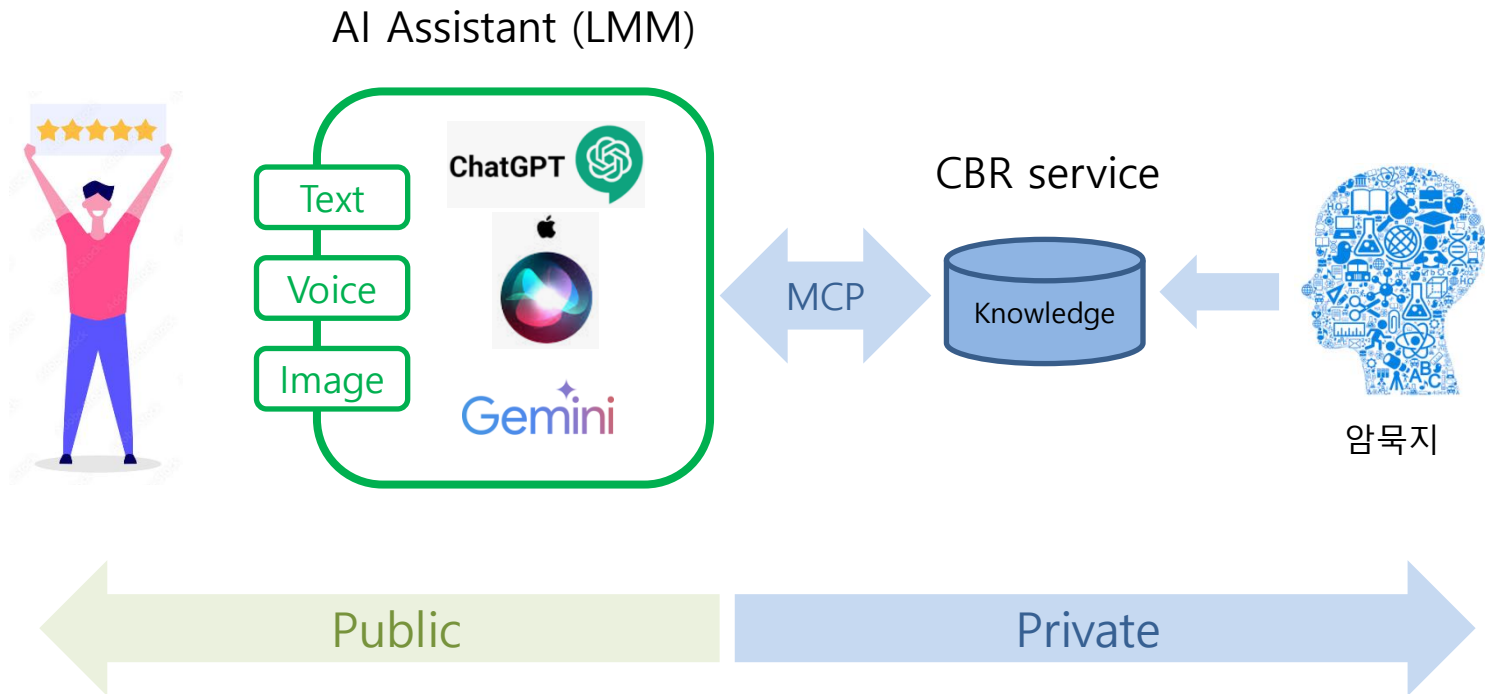
- 2022.11 OpenAI  ChatGPT
 - GPT → Transformer/Pre-Trained/Generative
 - Chat → Reinforcement Learning
 - Huge Parameters & Training Data & Human Feedback
- 2023.03 Google Bard → 2023.12 Gemini
- [ChatGPT vs Gemini](#)
- [Open Source LLMs](#) – Meta Llama



- Threat or Opportunity?



Opportunities



CBR Solution

