

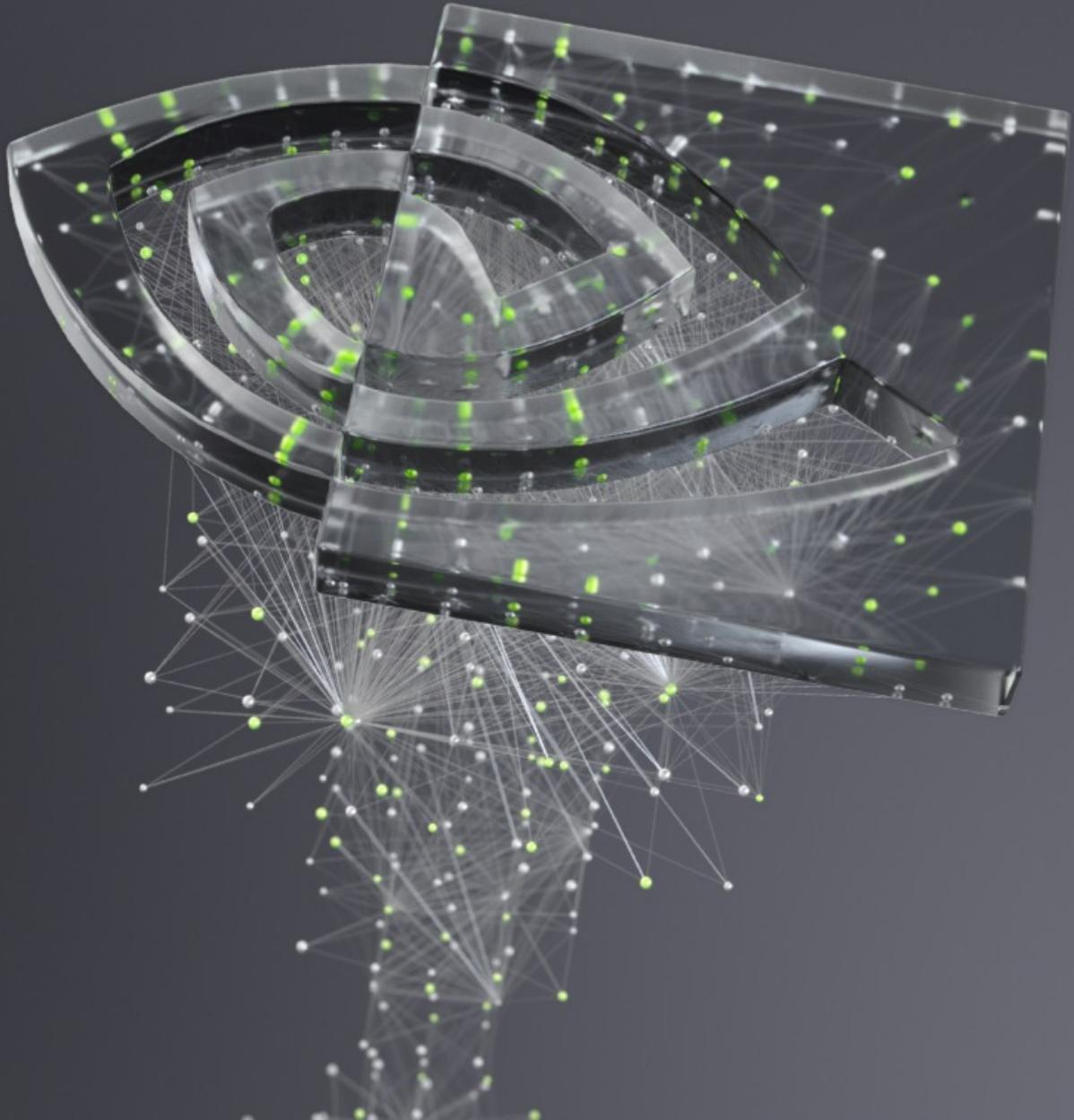


DEEP  
LEARNING  
INSTITUTE

# 딥러닝의 기초

6부: 고급 아키텍처

자료 및 발표: DLI Ambassador 박제윤



# 목차

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1부: 딥러닝 소개

2부: 뉴럴 네트워크의 트레이닝 방식

3부: CNN(Convolutional Neural Network)

4부: 데이터 증강 및 배포

5부: 사전 트레이닝된 모델

6부: 고급 아키텍처

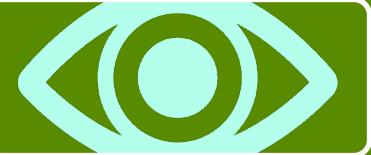
# 목차 – 6부

- 다음 단계
- 자연어 처리
- RNN(Recurrent Neural Network)
- 기타 아키텍처
- 결론

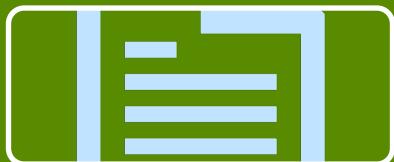
A complex network graph is displayed against a dark gray background. The graph consists of numerous small, semi-transparent circular nodes in two colors: white and light green. These nodes are interconnected by a dense web of thin, light gray lines representing edges. The overall structure appears organic and decentralized, with no single central hub. The white nodes are more numerous and are scattered throughout the space, while the green nodes are more concentrated in several distinct clusters or communities.

다음 단계

# AI 분야



컴퓨터 비전



자연어 처리

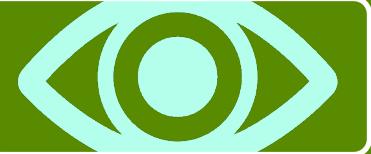


강화 학습

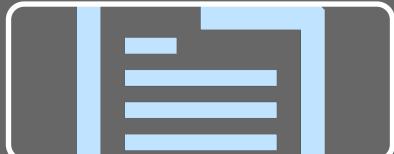


이상 탐지

# AI 분야



컴퓨터 비전



자연어 처리



강화 학습



이상 탐지



# 자연어 처리 NATURAL LANGUAGE PROCESSING

# 단어에서 숫자로

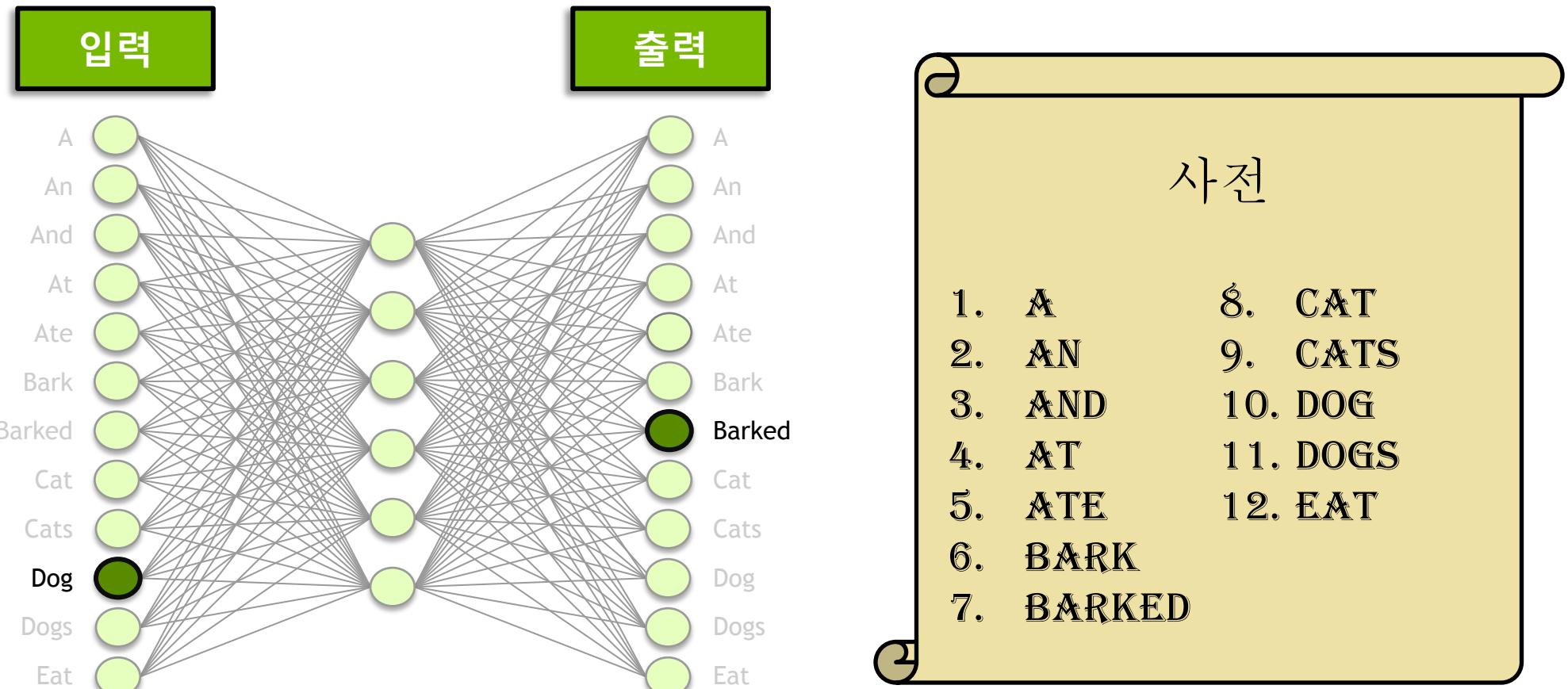
“A dog barked at a cat.”

[1, 10, 7, 4, 1, 8]

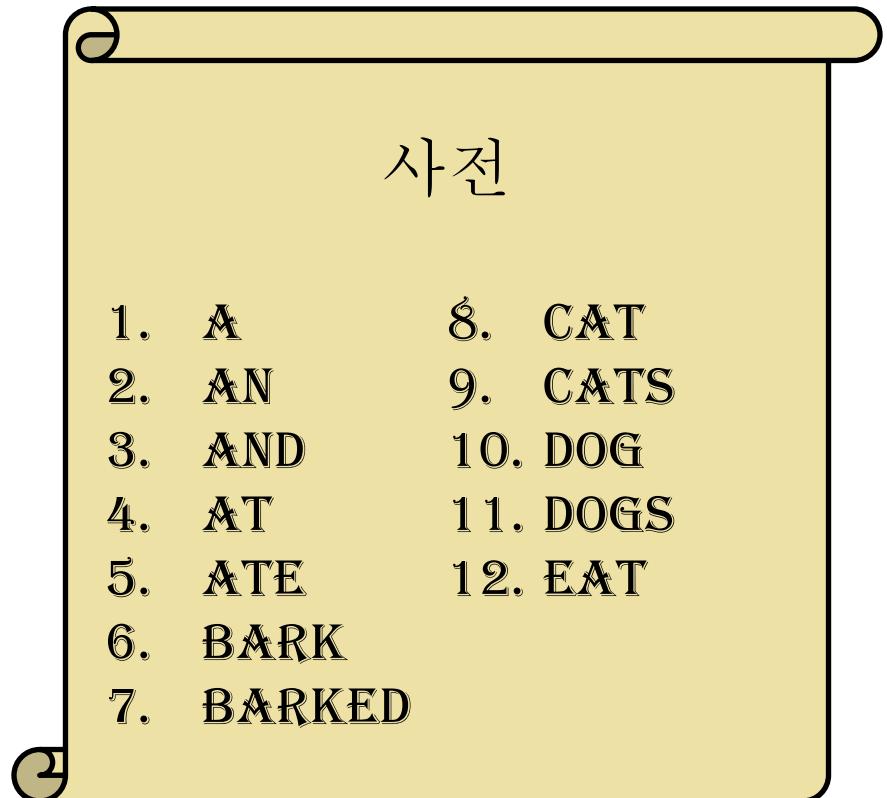
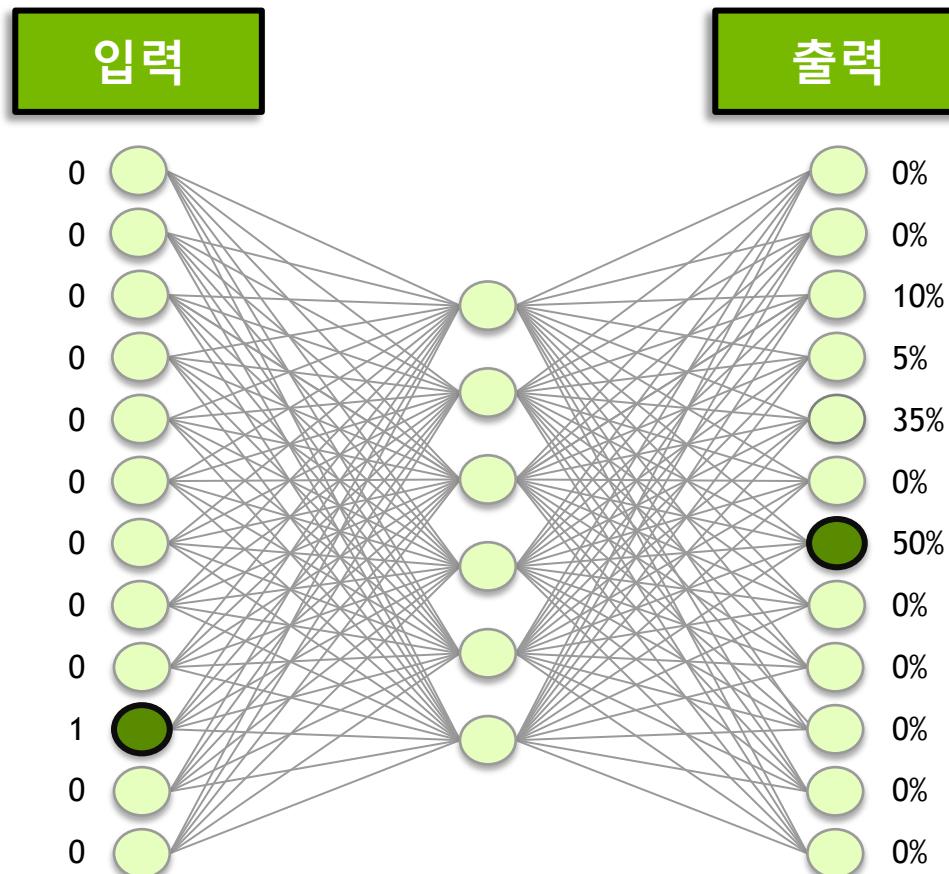
사전

- |           |          |
|-----------|----------|
| 1. A      | 8. CAT   |
| 2. AN     | 9. CATS  |
| 3. AND    | 10. DOG  |
| 4. AT     | 11. DOGS |
| 5. ATE    | 12. EAT  |
| 6. BARK   |          |
| 7. BARKED |          |

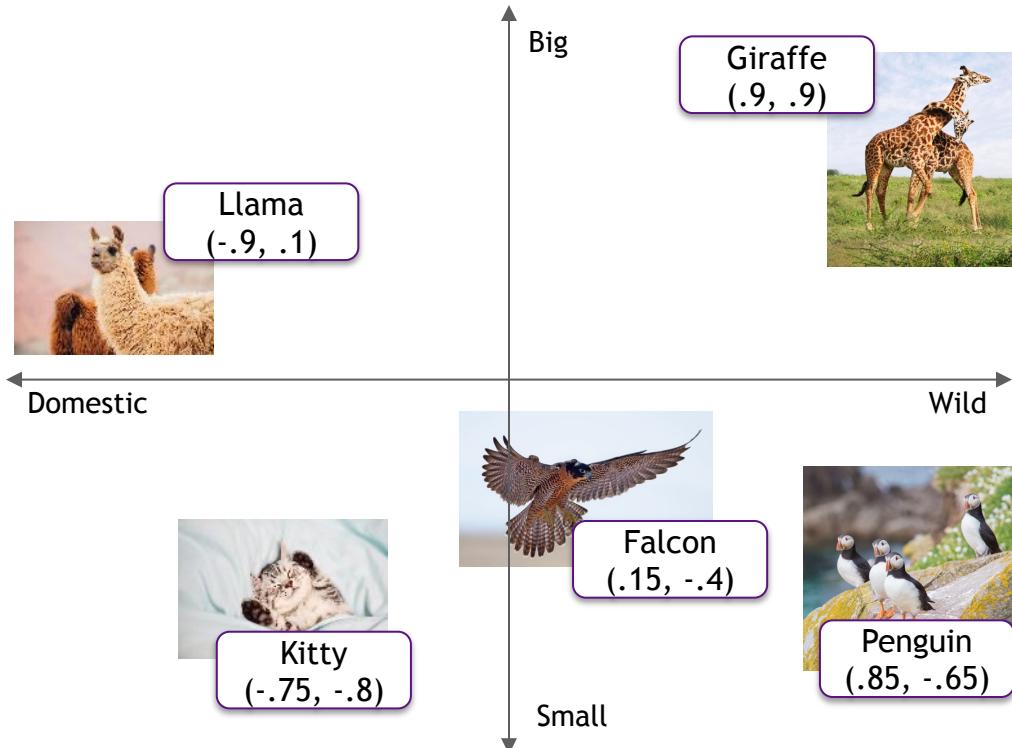
# 단어에서 숫자로



# 단어에서 숫자로



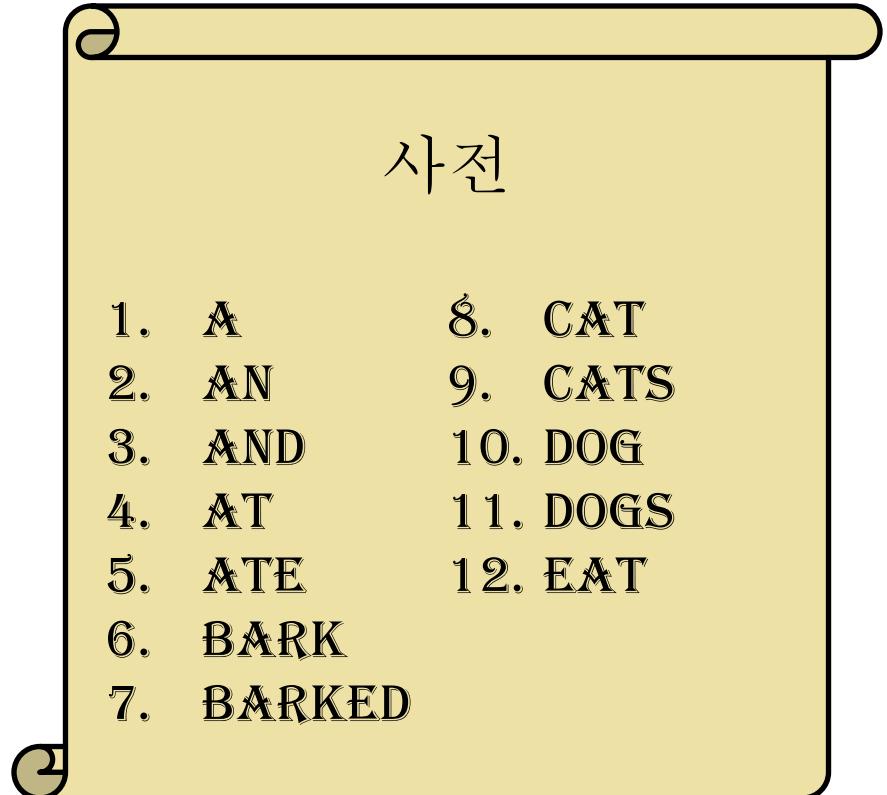
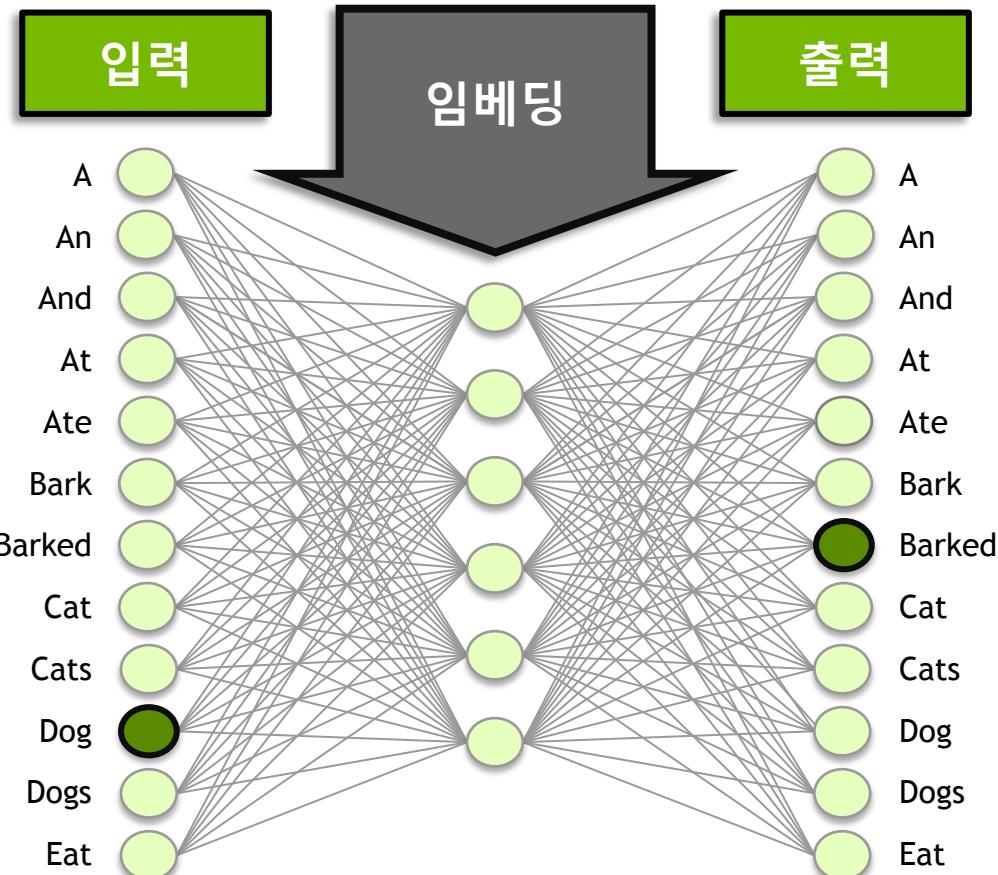
# 단어에서 숫자로



## 더 큰 사전

1.	A	31.	ATE	61.	CATS
2.	AN	32.	BARK	62.	DOG
3.	AND	33.	BARKED	63.	DOGS
4.	AT	34.	CAT	64.	EAT
5.	ATE	35.	CATS	65.	EATEN
6.	BARK	36.	DOG	66.	A
7.	BARKED	37.	DOGS	67.	AN
8.	CAT	38.	EAT	68.	AND
9.	CATS	39.	EATEN	69.	AT
10.	DOG	40.	A	70.	ATE
11.	DOGS	41.	AN	71.	BARK
12.	EAT	42.	AND	72.	BARKED
13.	EATEN	43.	AT	73.	CAT
14.	A	44.	ATE	74.	CATS
15.	AN	45.	BARK	75.	DOG
16.	AND	46.	BARKED	76.	DOGS
17.	AT	47.	CAT	77.	EAT
18.	ATE	48.	CATS	78.	EATEN
19.	BARK	49.	DOG	79.	...
20.	BARKED	50.	DOGS	80.	...
21.	CAT	51.	EAT	81.	...
22.	CATS	52.	EATEN	82.	...
23.	DOG	53.	A		
24.	DOGS	54.	AN		
25.	EAT	55.	AND		
26.	EATEN	56.	AT		
27.	A	57.	ATE		
28.	AN	58.	BARK		
29.	AND	59.	BARKED		
30.	AT	60.	CAT		

# 단어에서 숫자로

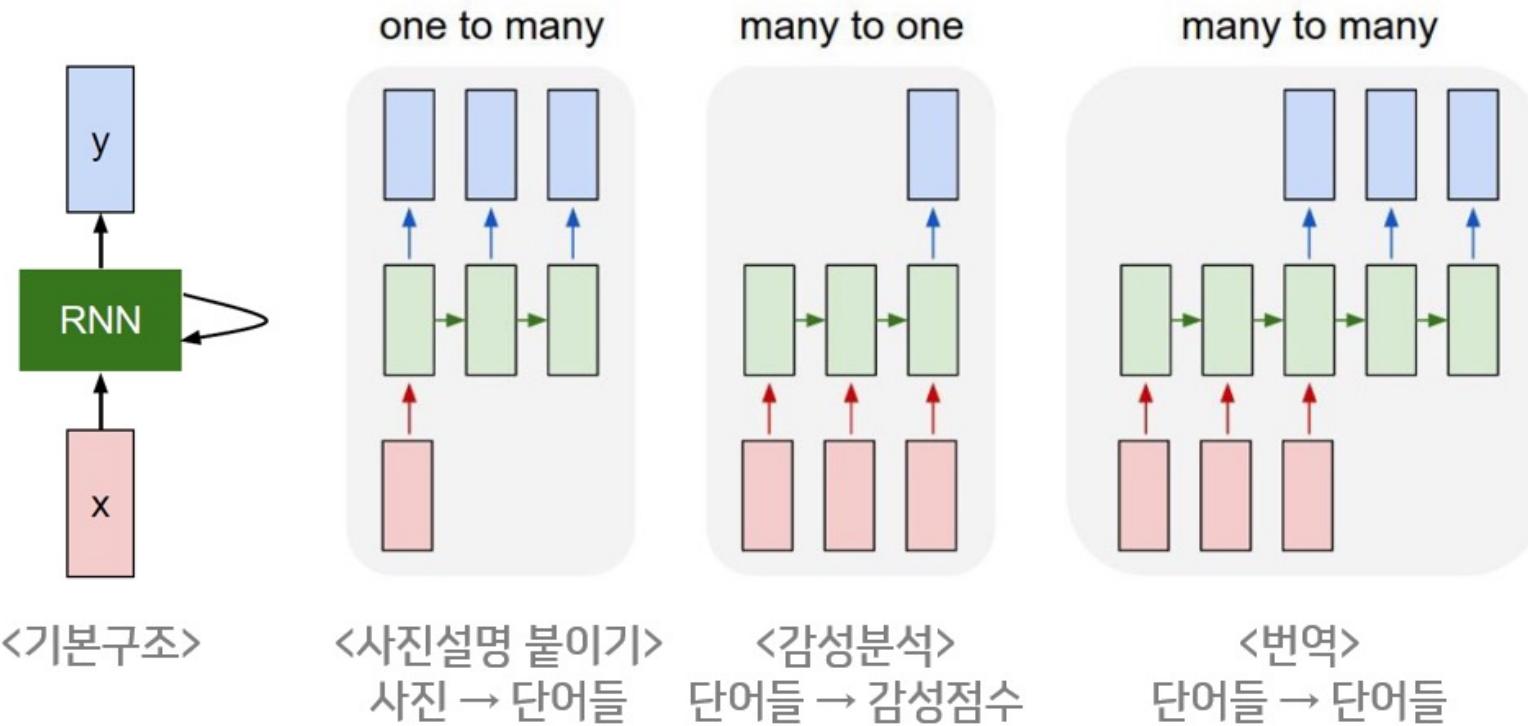




RNN(Recurrent Neural Network)

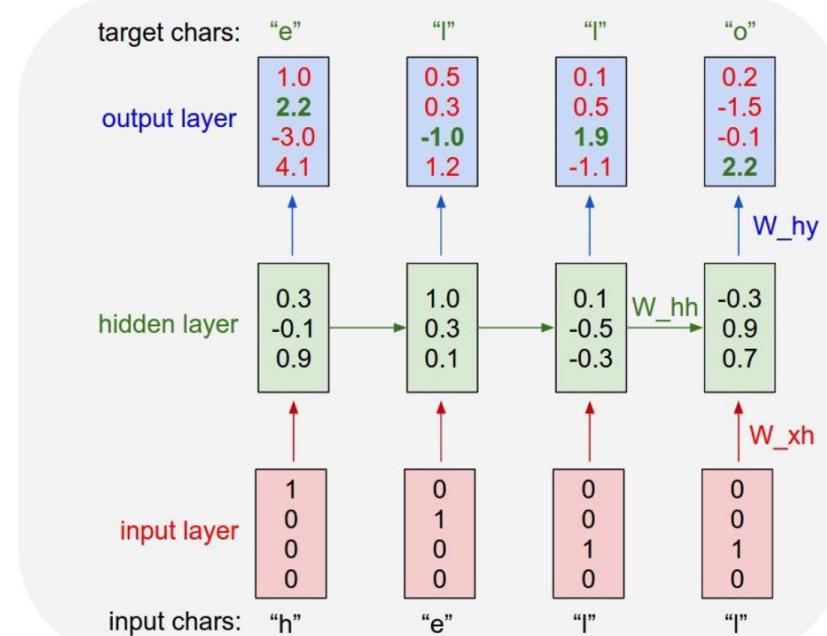
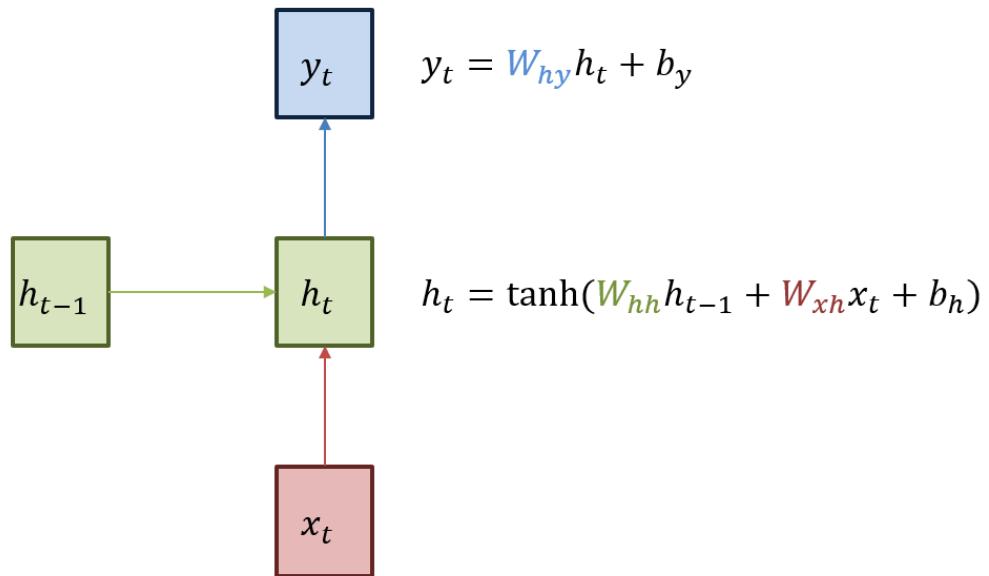
# RNN(RECURRENT NEURAL NETWORK)

## 1. RNN의 기본 구조



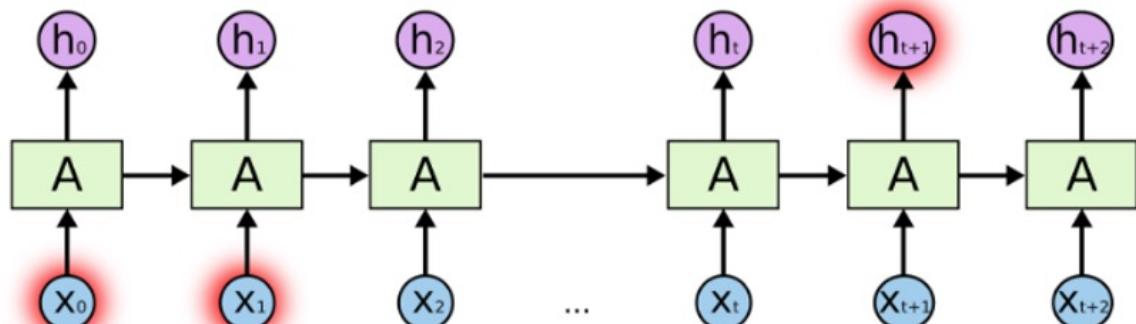
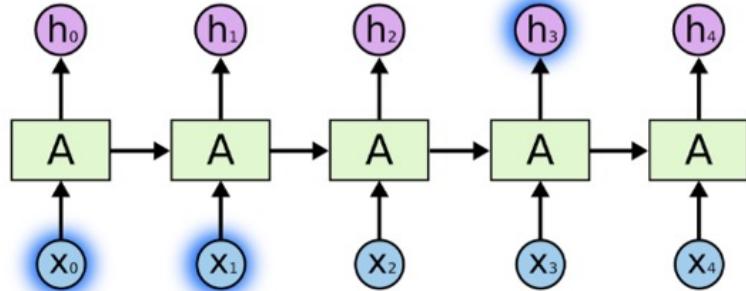
# RNN(RECURRENT NEURAL NETWORK)

## 1. RNN의 기본 구조



# RNN(RECURRENT NEURAL NETWORK)

## 2. RNN의 문제점: Vanishing gradient problem

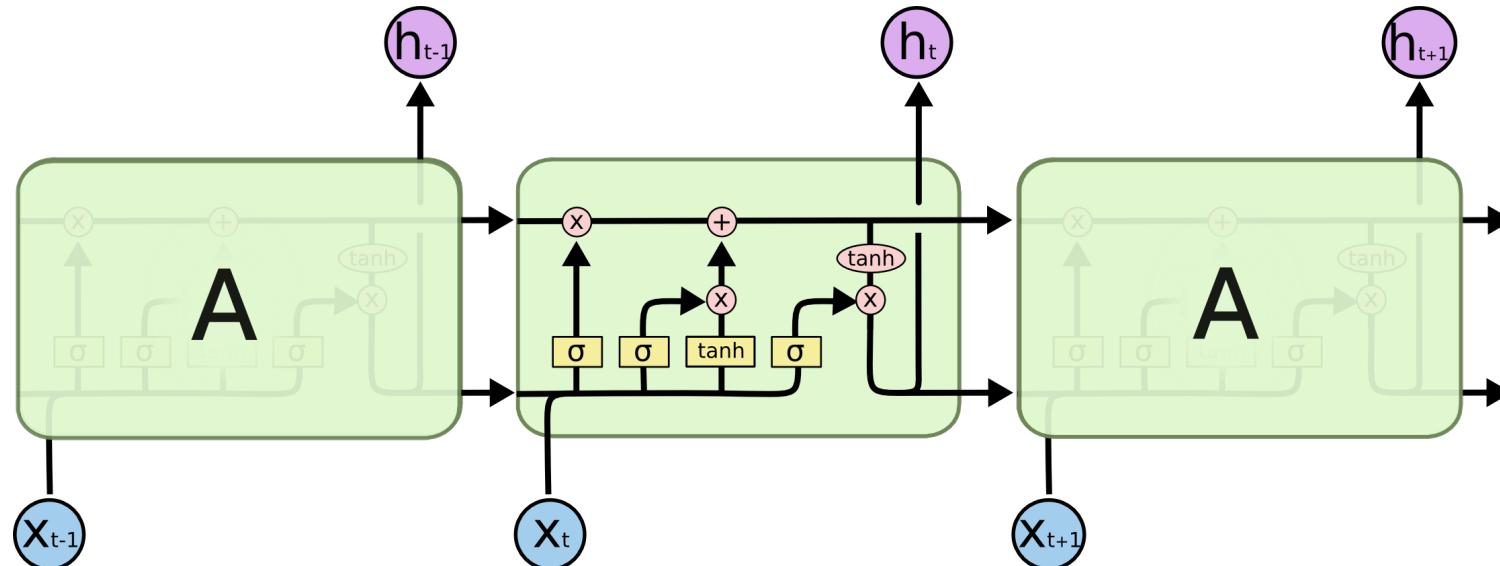


<관련 정보와 그 정보를 사용하는 지점 사이 거리가 멀 경우 RNN 학습능력 저하>

# RNN(RECURRENT NEURAL NETWORK)

## 3. Long Short-Term Memory (LSTM)

- LSTM은 RNN의 hidden state에 cell state와 기억할 정보들을 조절하는 gate (forget gate, input gate)들을 추가하여 gradient 전파가 잘 되게 개선한 모델



# RNN(RECURRENT NEURAL NETWORK)

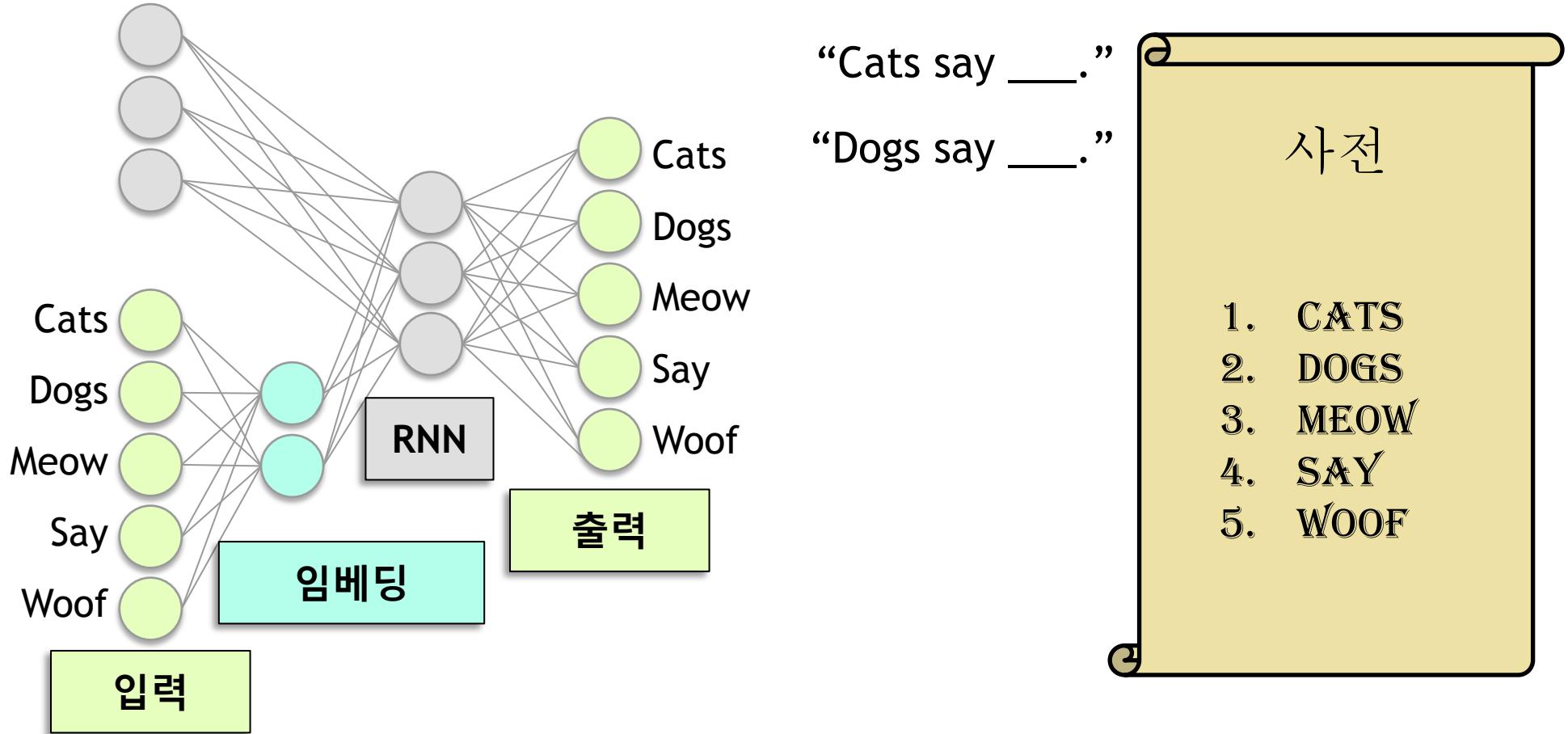
“Cats say \_\_\_\_.”

“Dogs say \_\_\_\_.”

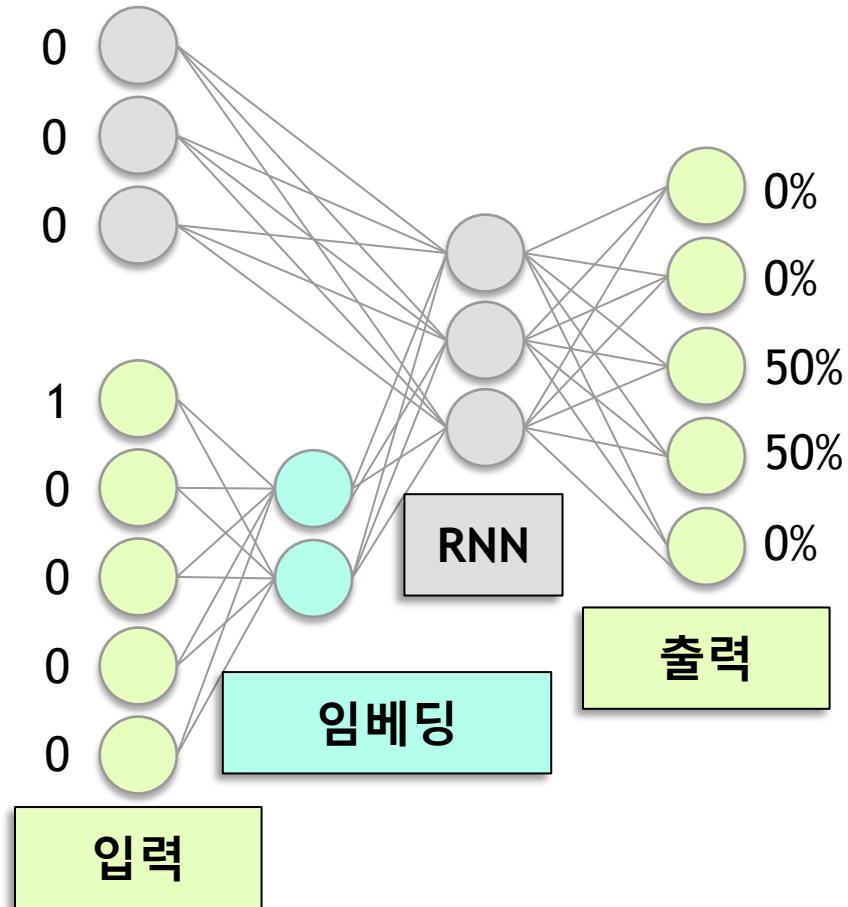
사전

1. CATS
2. DOGS
3. MEOW
4. SAY
5. WOOF

# RNN(RECURRENT NEURAL NETWORK)



# RNN(RECURRENT NEURAL NETWORK)



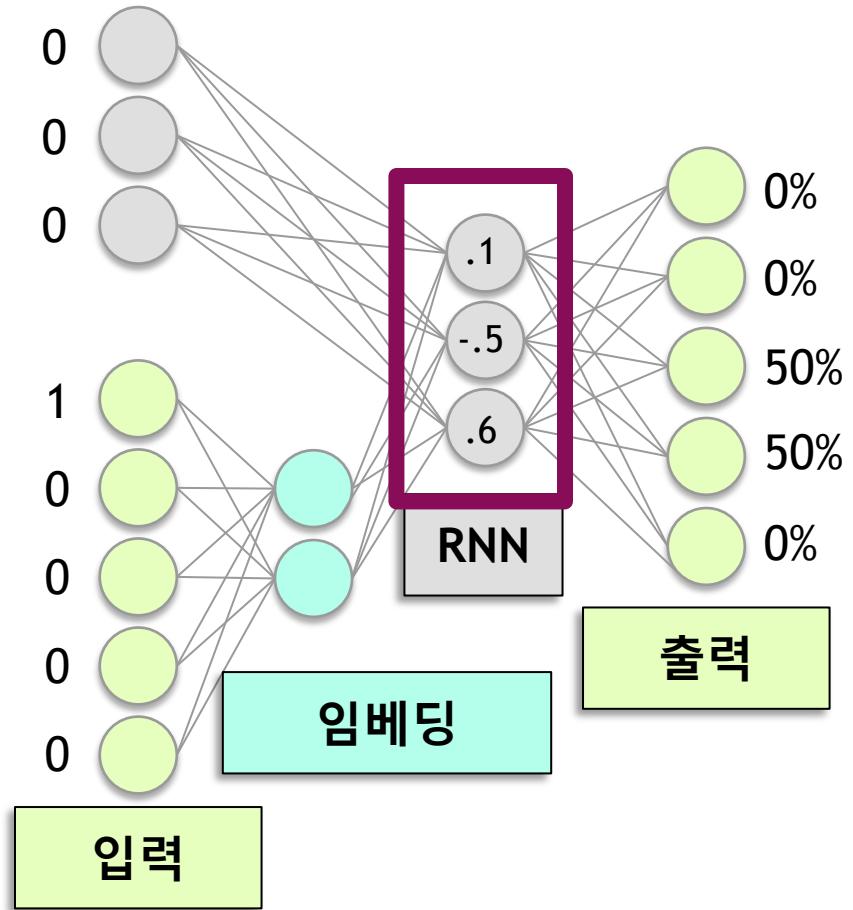
"Cats say \_\_\_\_."

"Dogs say \_\_\_\_."

사전

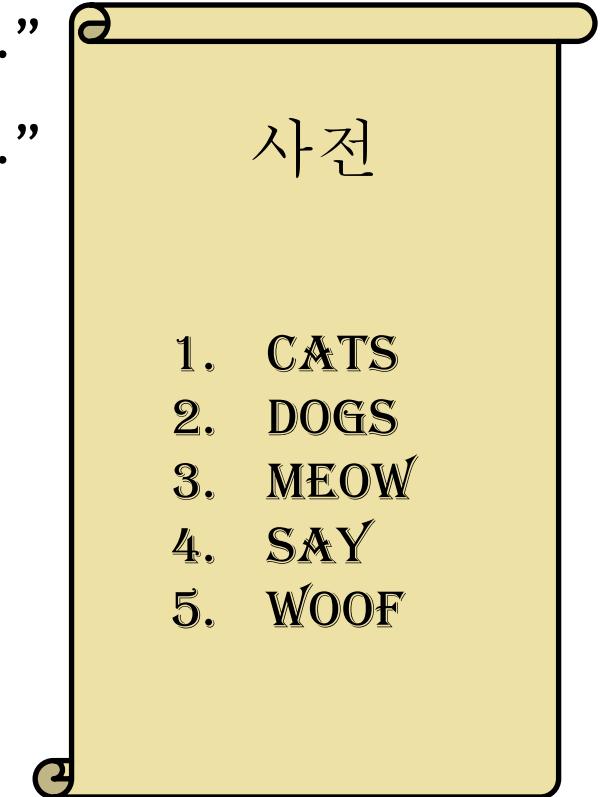
1. CATS
2. DOGS
3. MEOW
4. SAY
5. WOOF

# RNN(RECURRENT NEURAL NETWORK)

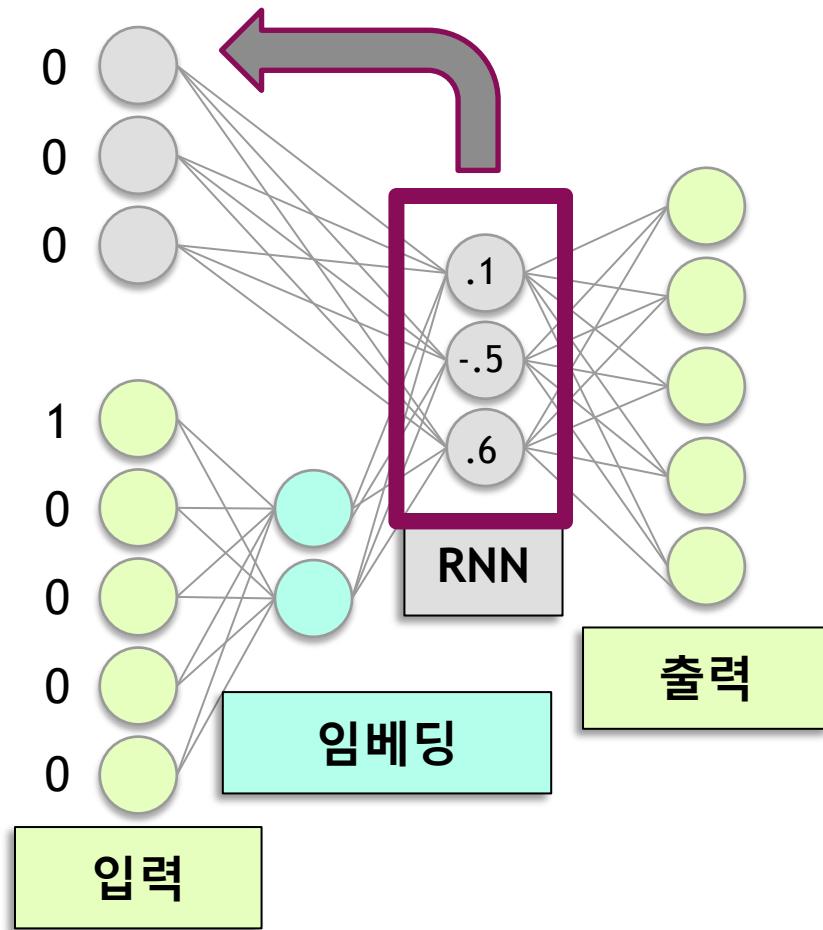


“Cats say \_\_\_\_.”

“Dogs say \_\_\_\_.”

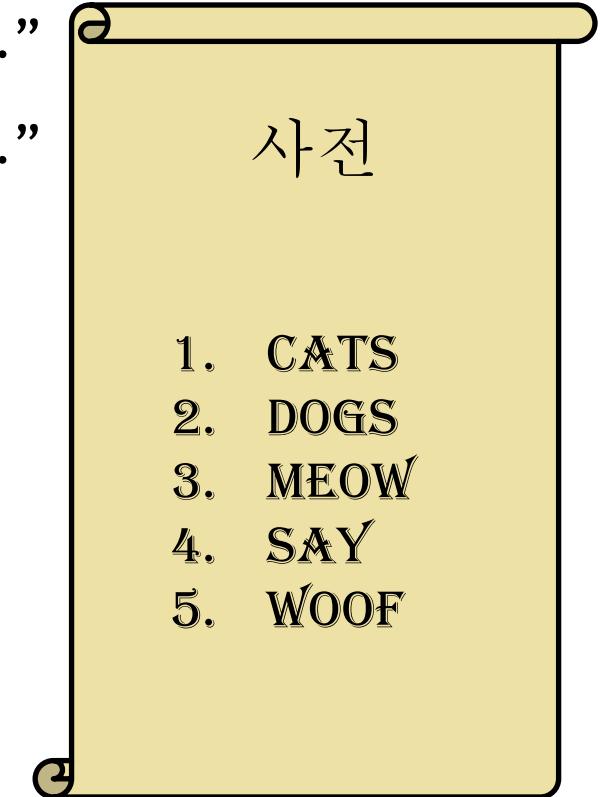


# RNN(RECURRENT NEURAL NETWORK)

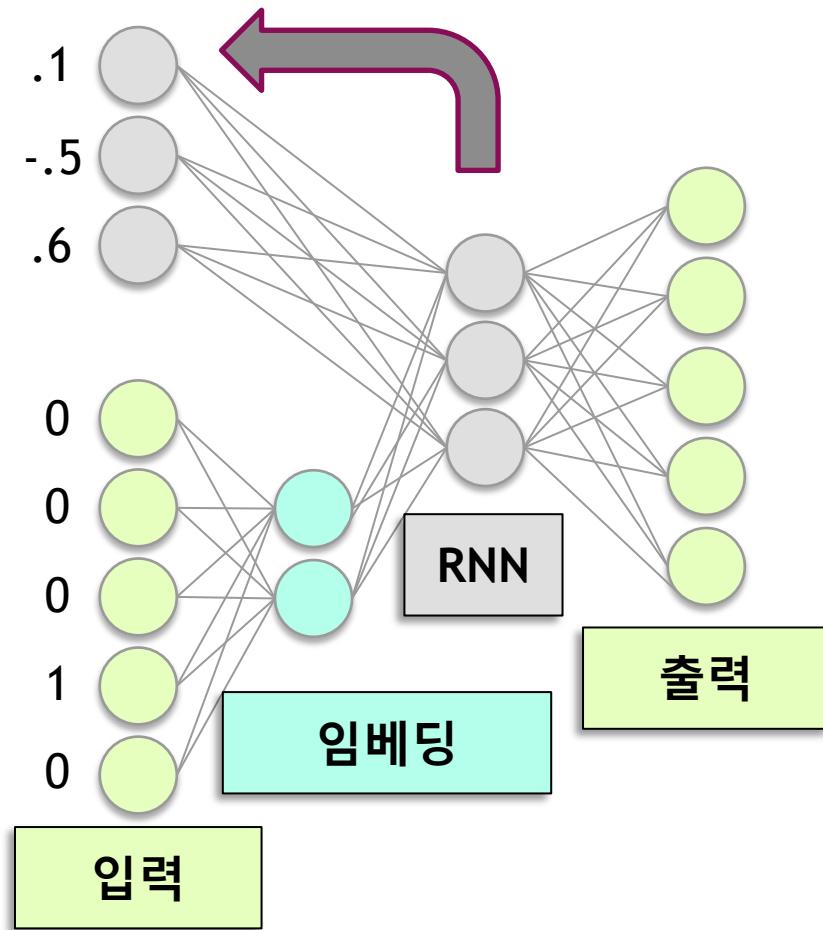


“Cats say \_\_\_\_.”

“Dogs say \_\_\_\_.”

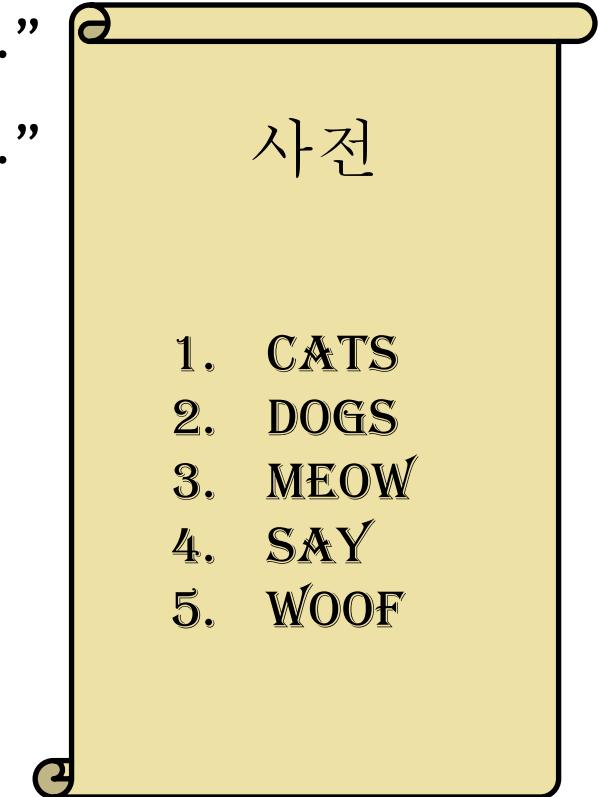


# RNN(RECURRENT NEURAL NETWORK)

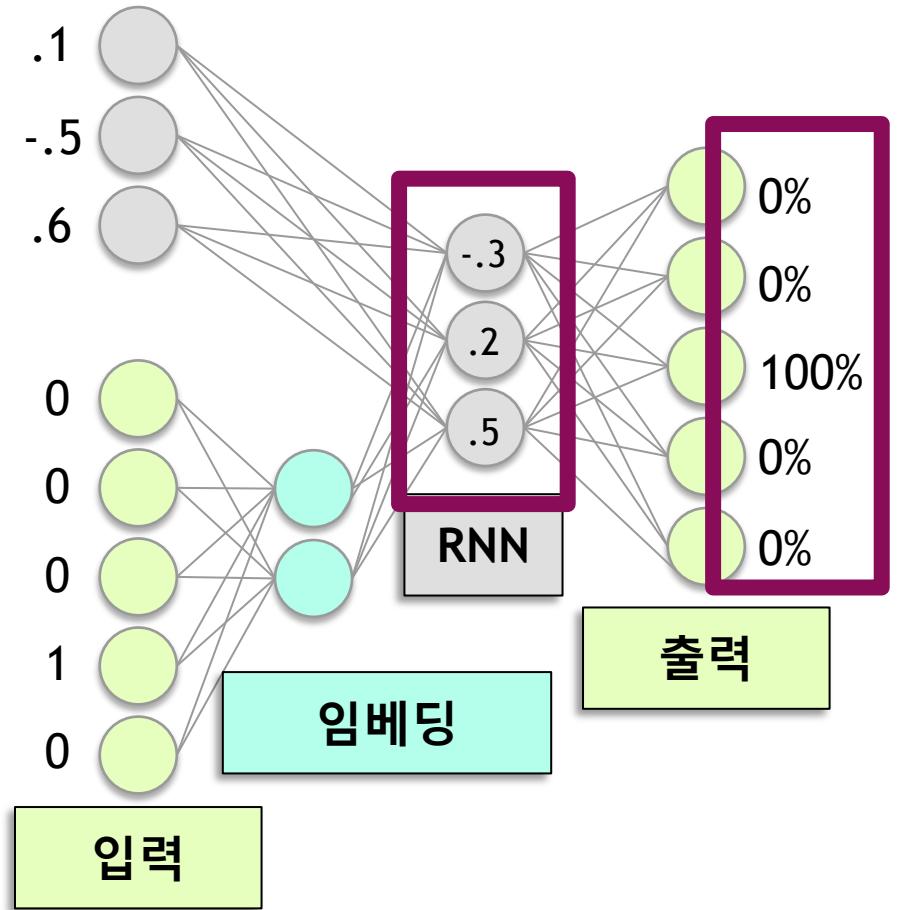


“Cats say \_\_\_\_.”

“Dogs say \_\_\_\_.”

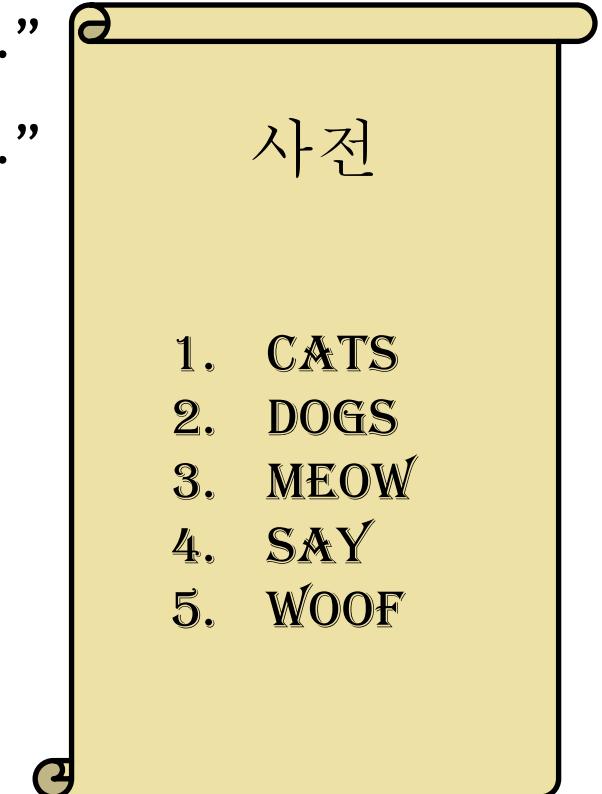


# RNN(RECURRENT NEURAL NETWORK)

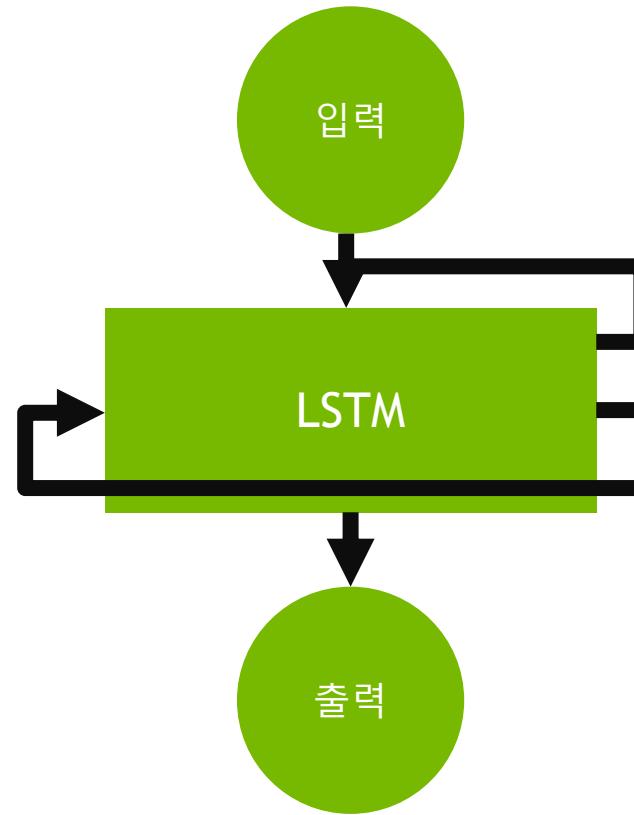
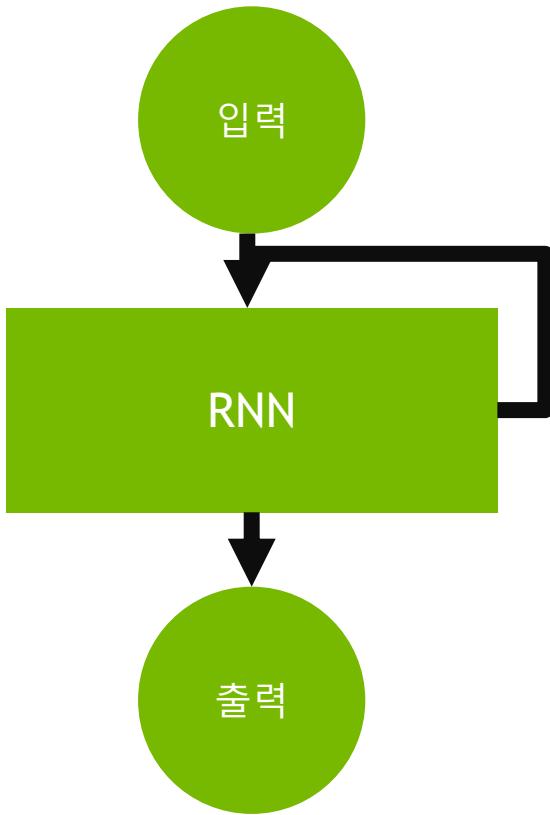


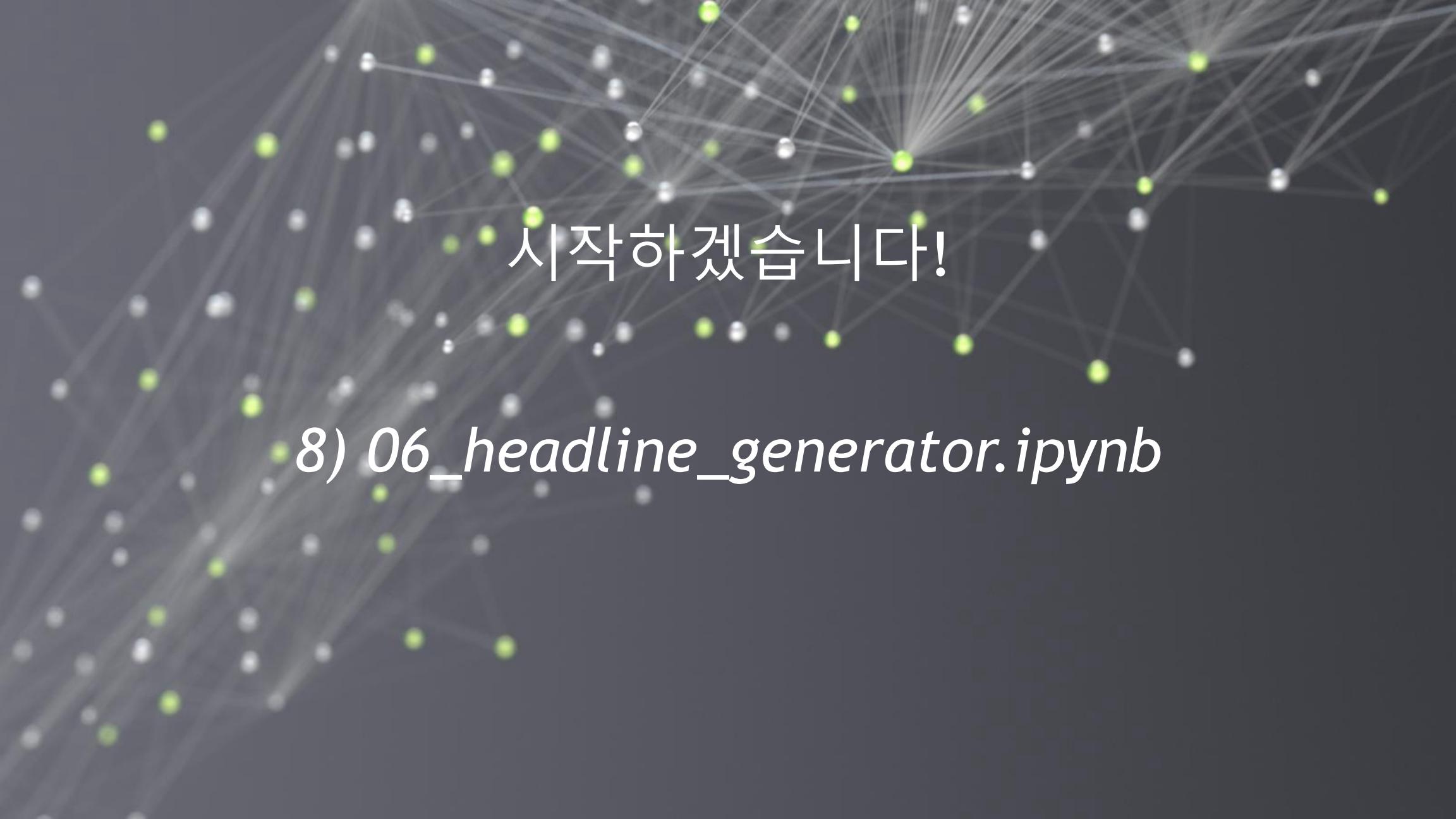
“Cats say \_\_\_\_.”

“Dogs say \_\_\_\_.”



# RNN(RECURRENT NEURAL NETWORK)





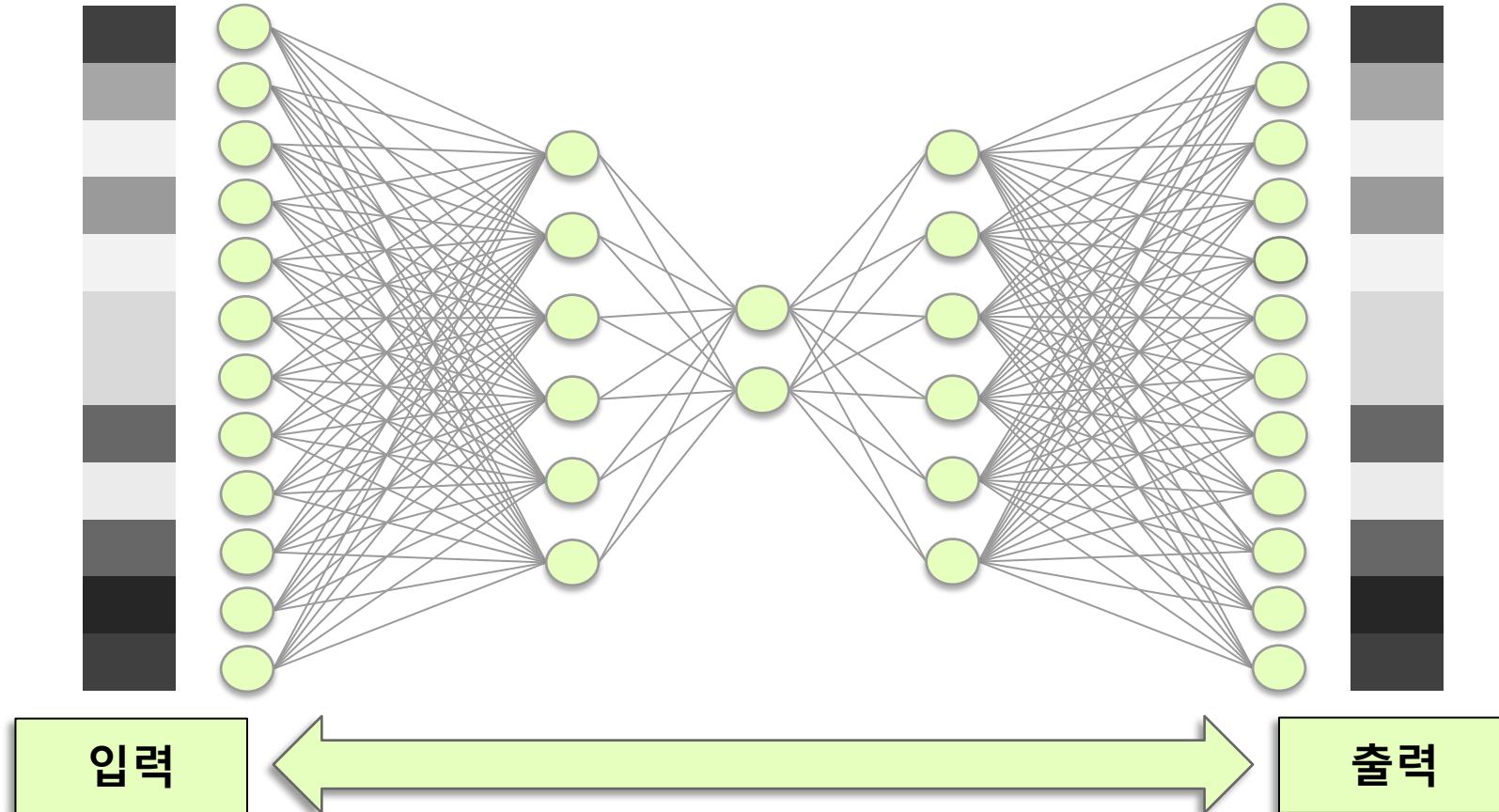
시작하겠습니다!

8) 06\_headline\_generator.ipynb

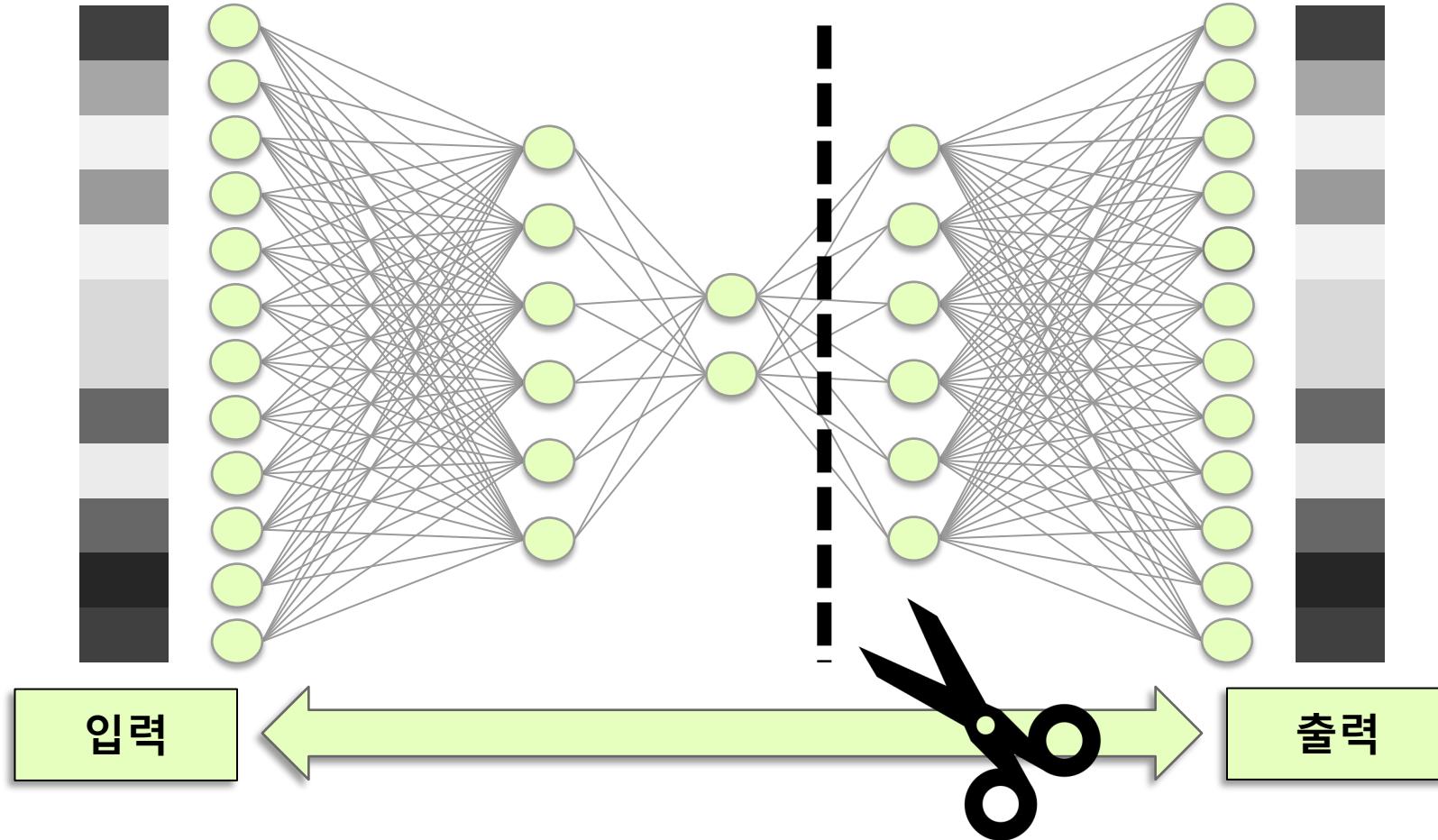


## 기타 아키텍처 OTHER ARCHITECTURES

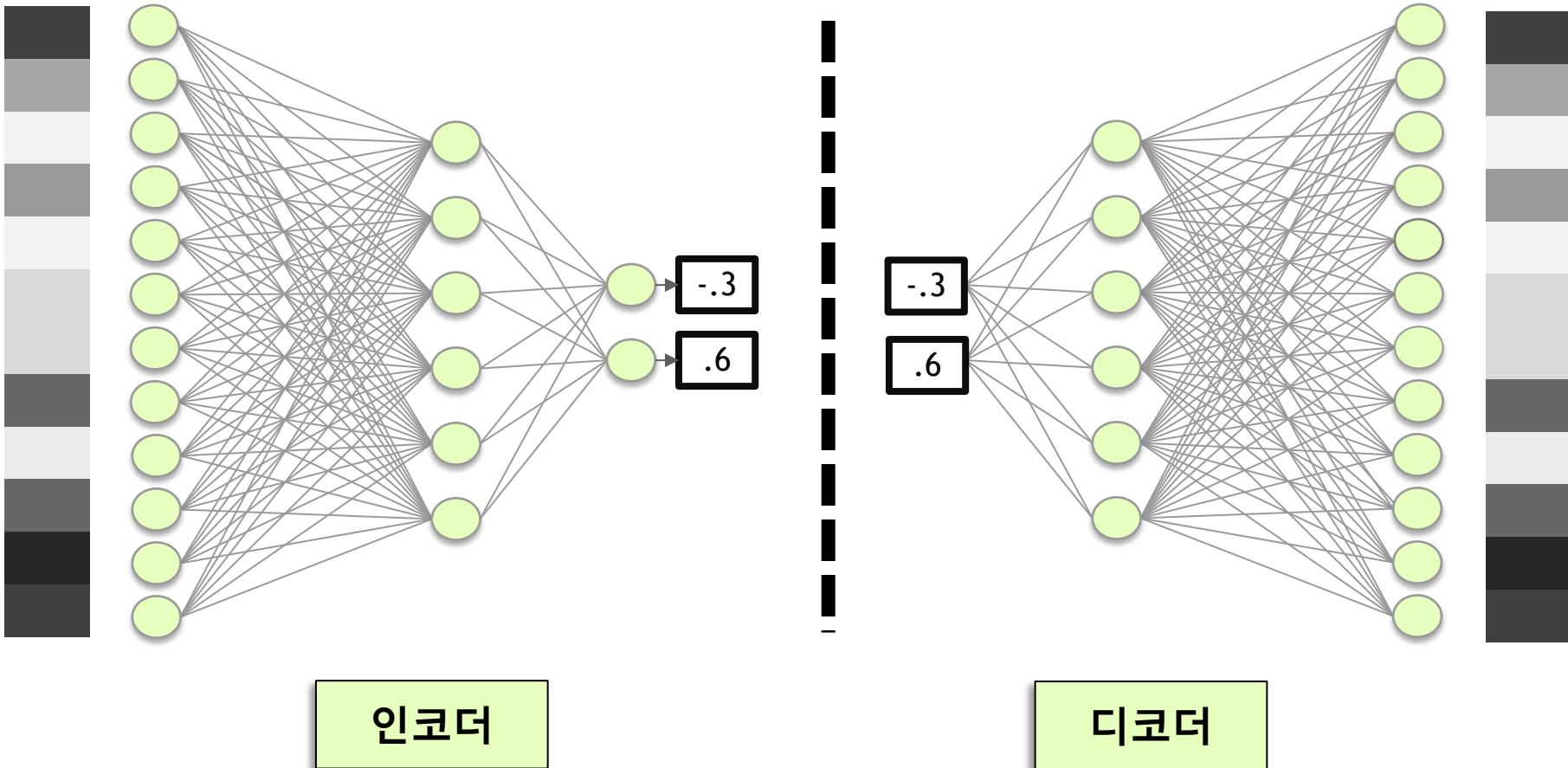
# 오토인코더(AUTO ENCODER)



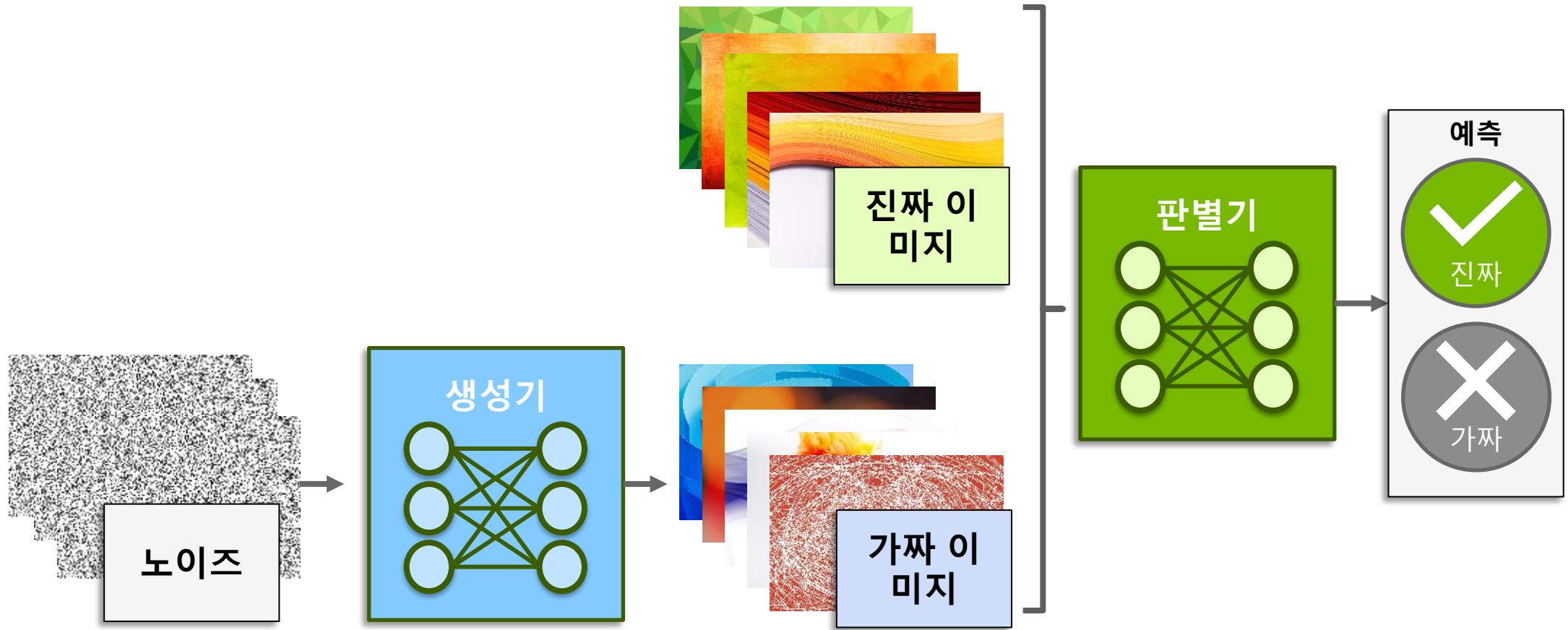
# 오토인코더(AUTO ENCODER)



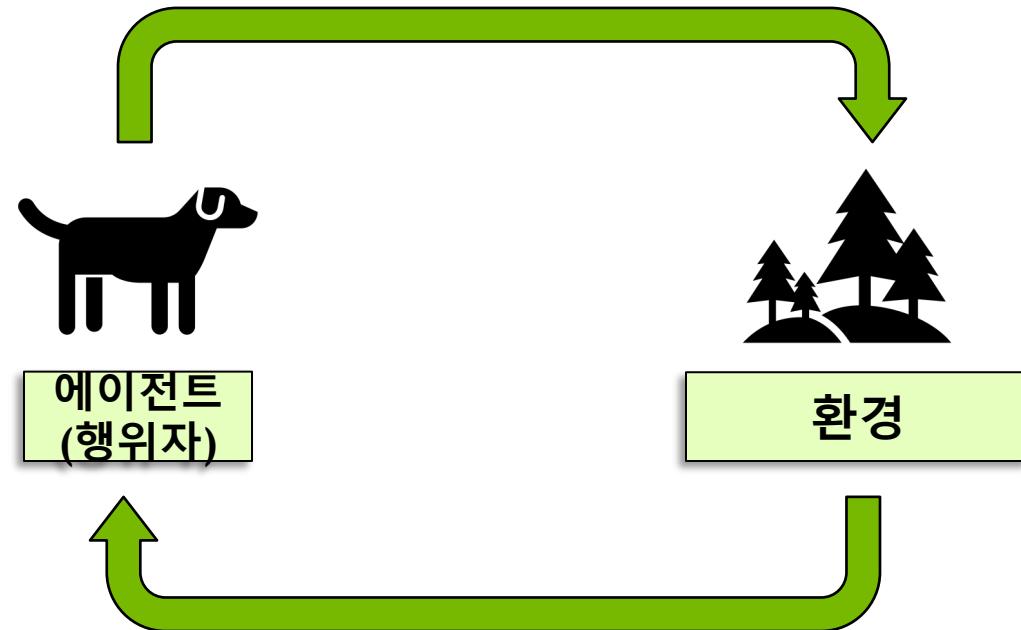
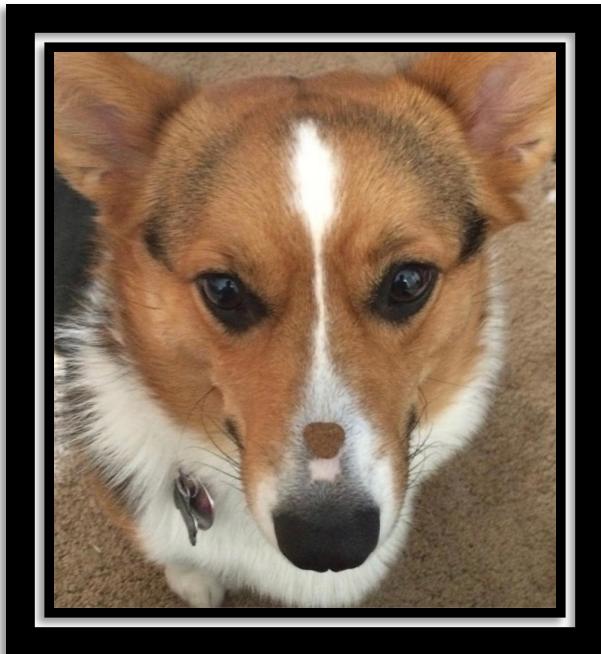
# 오토인코더(AUTO ENCODER)



# GAN(GENERATIVE ADVERSARIAL NETWORKS)



# 강화 학습 (REINFORCEMENT LEARNING)



A complex network graph is displayed against a dark gray background. The graph consists of numerous small, semi-transparent circular nodes scattered across the frame. Some nodes are white, while others are a bright lime green. These nodes are interconnected by a dense web of thin, light gray lines representing edges. The overall effect is one of a large, organic, and interconnected system.

다음 단계

# NGC 컨테이너

## 방대한 범위

- 다양한 범위의 워크로드 및 산업별 사용 사례

## 최적화

- DL 컨테이너가 매월 업데이트됨
- 최신 기능과 탁월한 성능 보유

## 보안 및 안정성

- 취약성 및 암호에 대해 검사됨
- 워크스테이션, 서버 및 클라우드 인스턴스에서 테스트됨

## 확장성

- 멀티 GPU 및 멀티 노드 시스템 지원

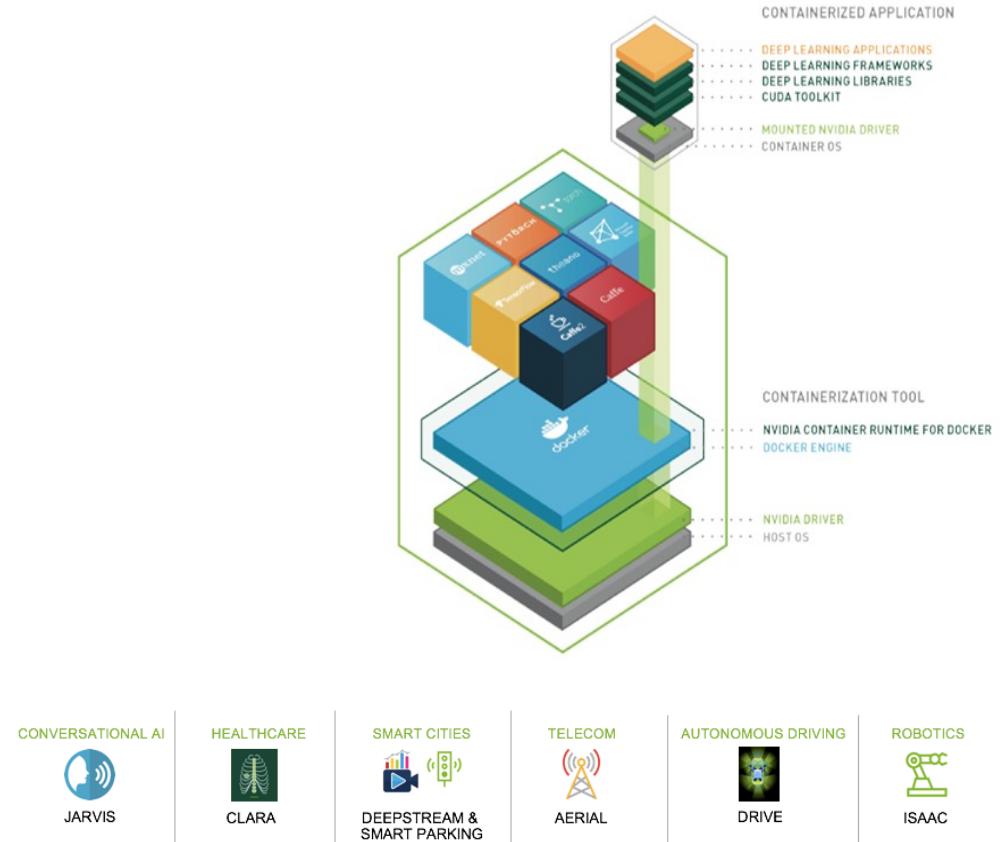
## 엔터프라이즈 및 HPC용으로 설계됨

- Docker, 특이성(Singularity) 및 기타 런타임 지원

## 어디서나 실행 가능

- 베어메탈, VM, Kubernetes
- X86, ARM, POWER
- 멀티 클라우드, 온-프레미스, 하이브리드, 엣지

## NGC 딥러닝 컨테이너



[NGC 컨테이너에 대해 자세히 알아보기](#)

# 이 수업의 다음 단계

Catalog: Containers / Containers: nvidia:dli-dl-fundamentals

## DLI Deep Learning Fundamentals Course -...

Publisher	Built By	Latest Tag	Modified	Size
NVIDIA	NVIDIA	v0.0.1	October 27, 2020	4.19 GB

**Multinode Support** No      **Multi-Arch Support**

**Description**  
Base environment used in the NVIDIA Deep Learning Institute (DLI) Course Fundamentals of Deep Learning, along with Next Steps project.

**Labels**

**Pull Command**

```
docker pull nvcr.io/nvidia/dli-dl-fundamentals:v0.0.1
```

1단계 Docker 설정

<https://www.docker.com/>

2단계 NGC 카탈로그 방문

<https://ngc.nvidia.com/catalog/containers/nvidia:dli-dl-fundamentals>

3단계 컨테이너 Pull 및 Run

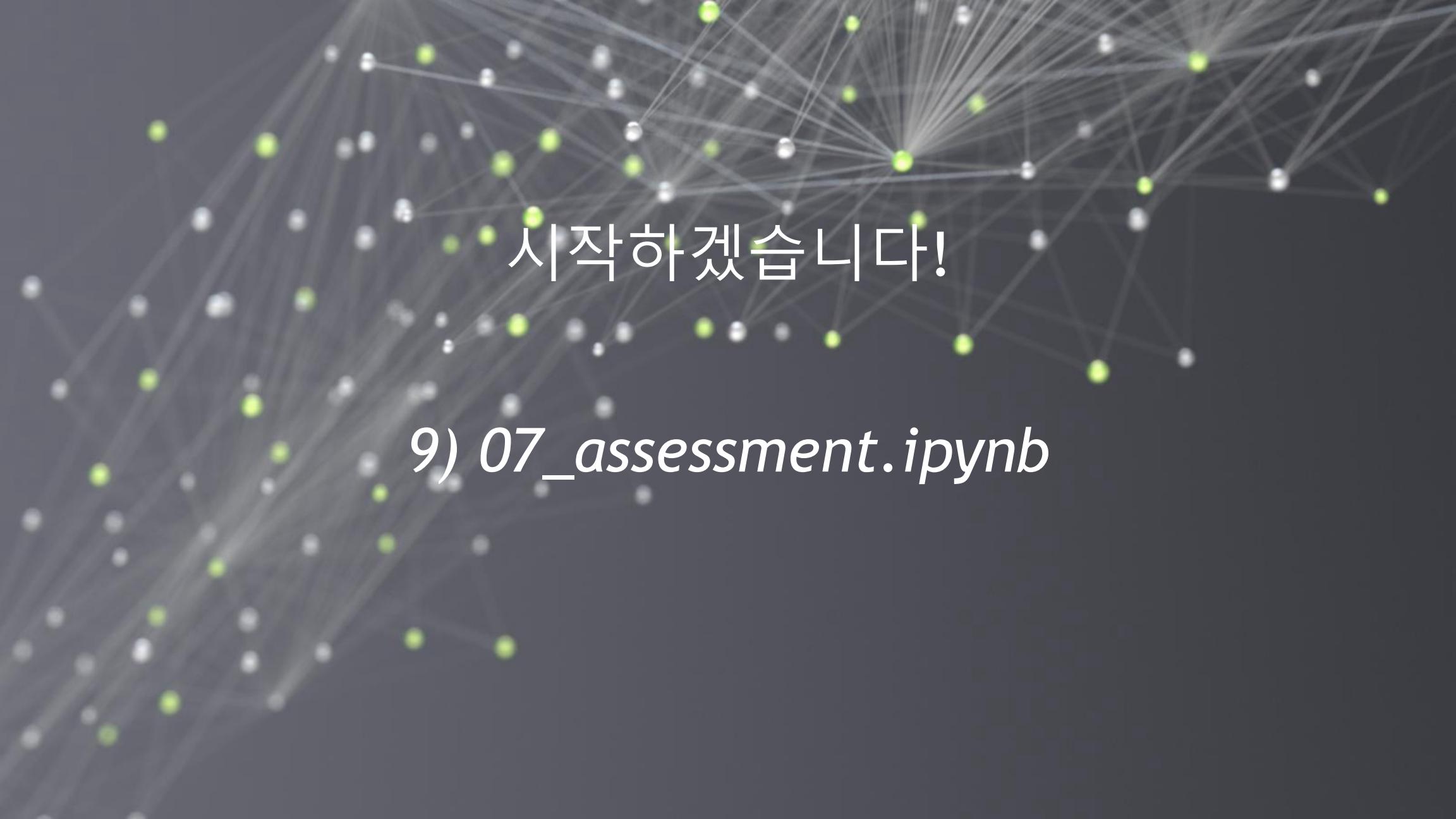
<localhost:8888>

A complex network graph is displayed against a dark gray background. The graph consists of numerous small, semi-transparent white and light green circular nodes, connected by thin, light gray lines representing edges. The nodes are distributed across the frame, with a higher density in the upper left and lower right quadrants, suggesting clusters or communities within the network.

결론

# 로켓 사이언스 모방하기





시작하겠습니다!

9) 07\_assessment.ipynb

# 감사합니다



<https://jeiyoongithub.io/>



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INSTITUTE