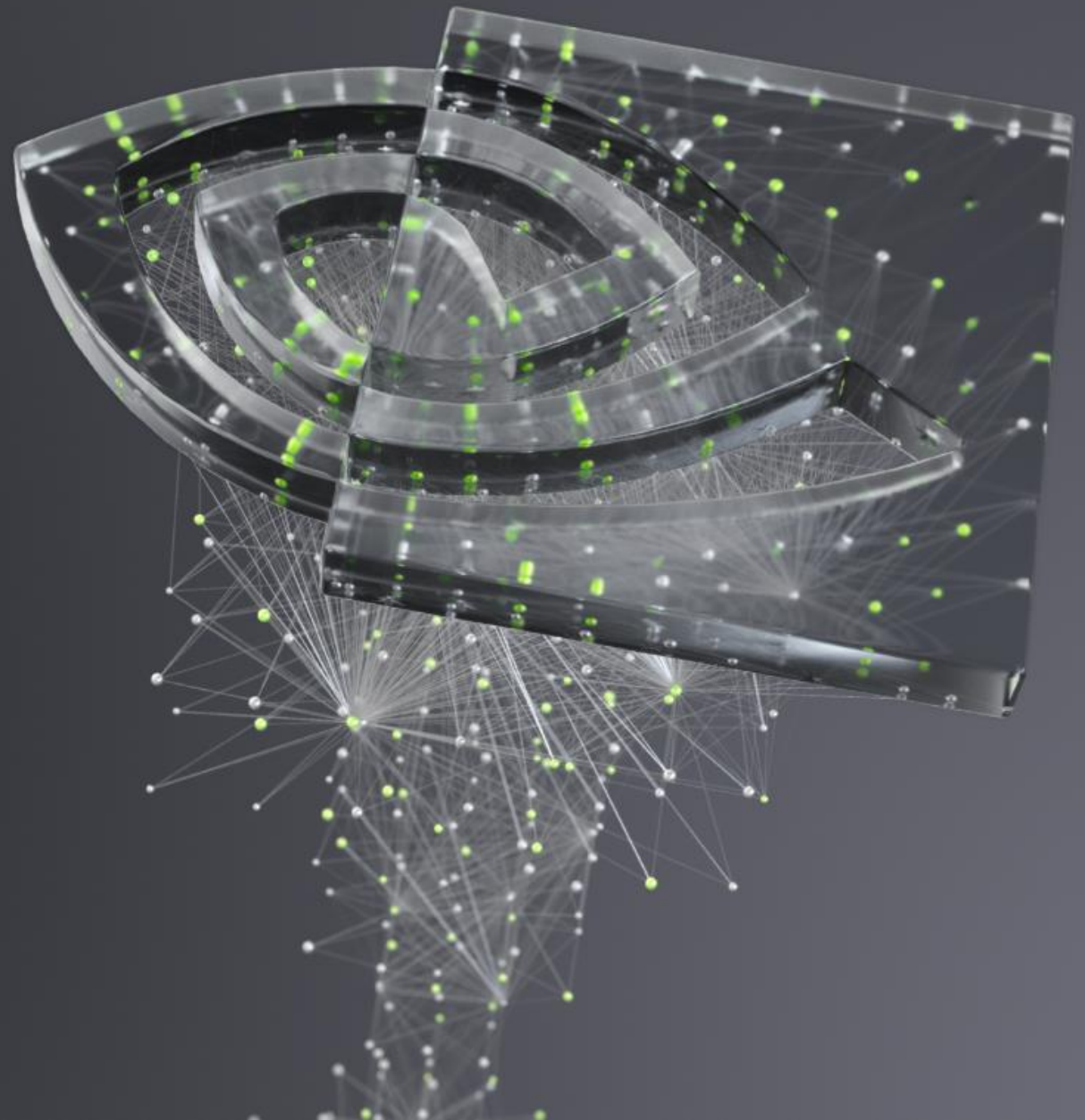


NVIDIA | DEEP LEARNING INSTITUTE

FUNDAMENTALS OF DEEP LEARNING

Part 6: Advanced Architectures

AGENDA

- Part 1: An Introduction to Deep Learning
- Part 2: How a Neural Network Trains
- Part 3: Convolutional Neural Networks
- Part 4: Data Augmentation and Deployment
- Part 5: Pre-trained Models
- Part 6: Advanced Architectures

AGENDA – PART 6

- Moving Forward
- Natural Language Processing
- Recurrent Neural Networks
- Other Architectures
- Closing Thoughts


MOVING FORWARD

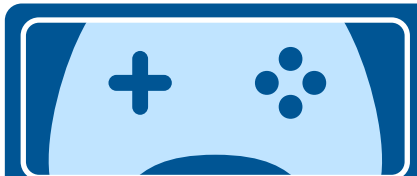
FIELDS OF AI

Computer Vision

- Optometry

Natural Language Processing

- Linguistics



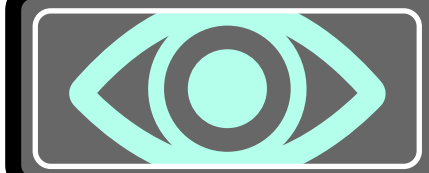
Reinforcement Learning

- Game Theory
- Psychology

Anomaly Detection

- Security
- Medicine

FIELDS OF AI



Computer Vision

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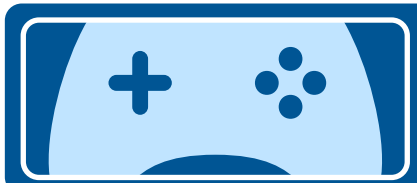

Reinforcement Learning

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FIELDS OF AI

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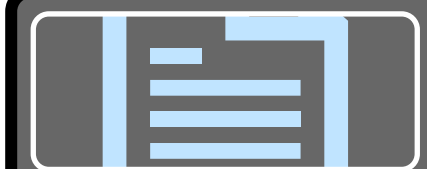
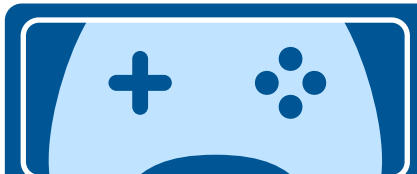


Natural Language Processing

- Linguistics



Reinforcement Learning

- Game Theory
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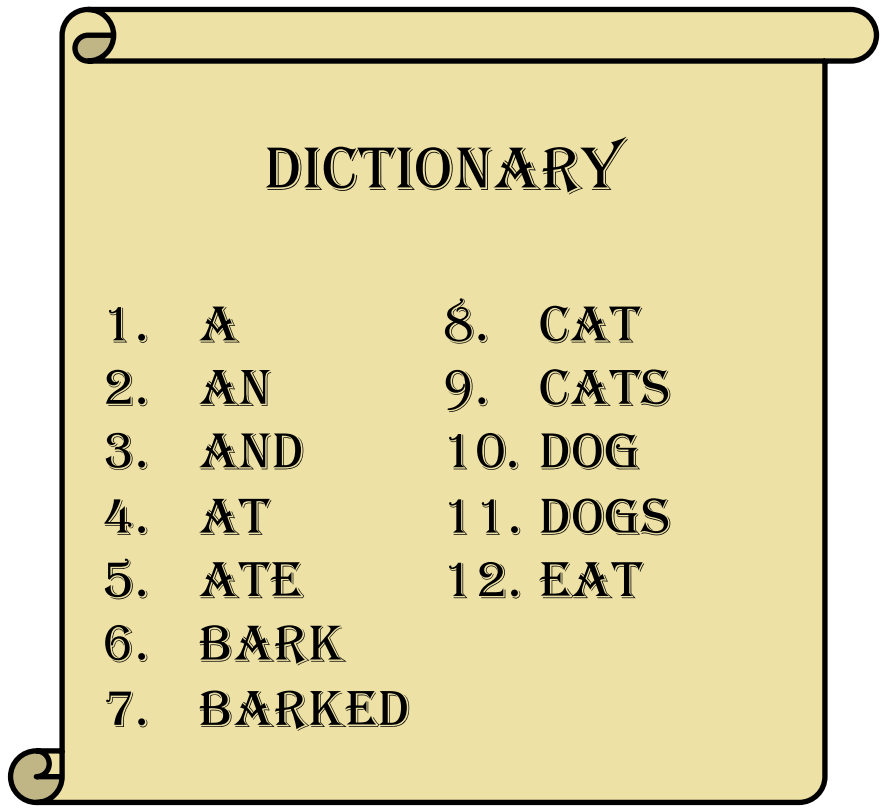
NATURAL LANGUAGE PROCESSING

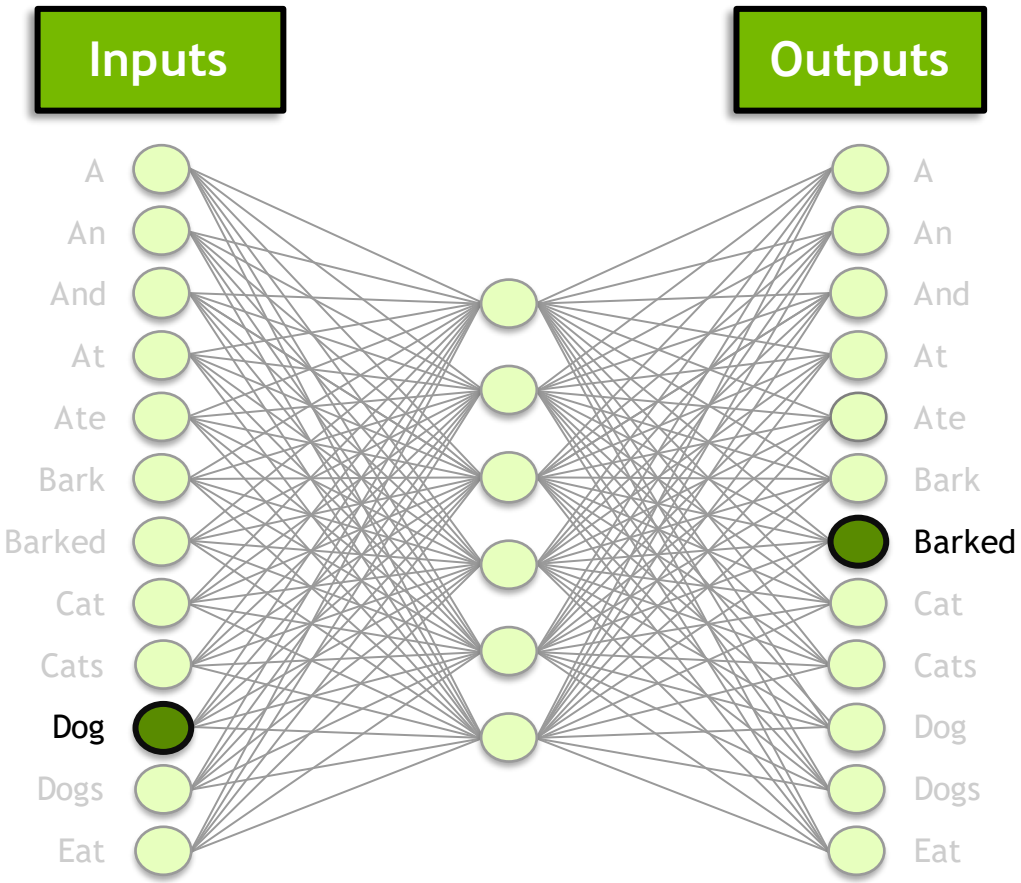
FROM WORDS TO NUMBERS

"A dog barked at a cat."

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



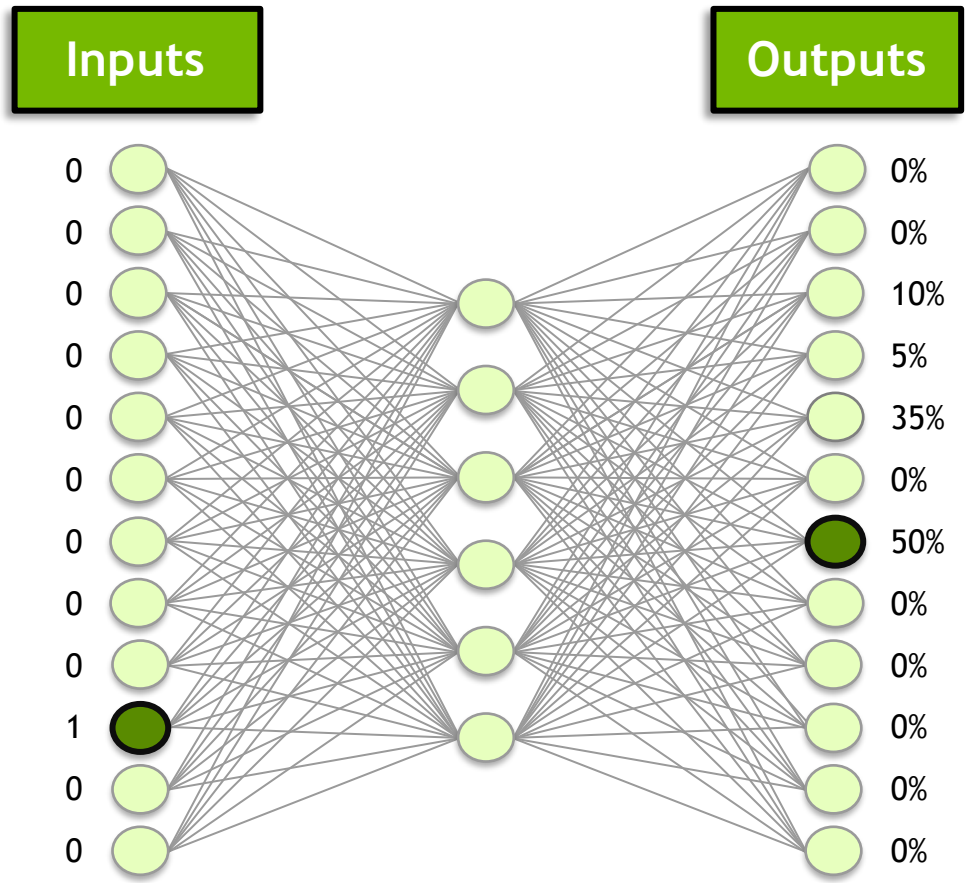
FROM WORDS TO NUMBERS



DICTIONARY

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

FROM WORDS TO NUMBERS



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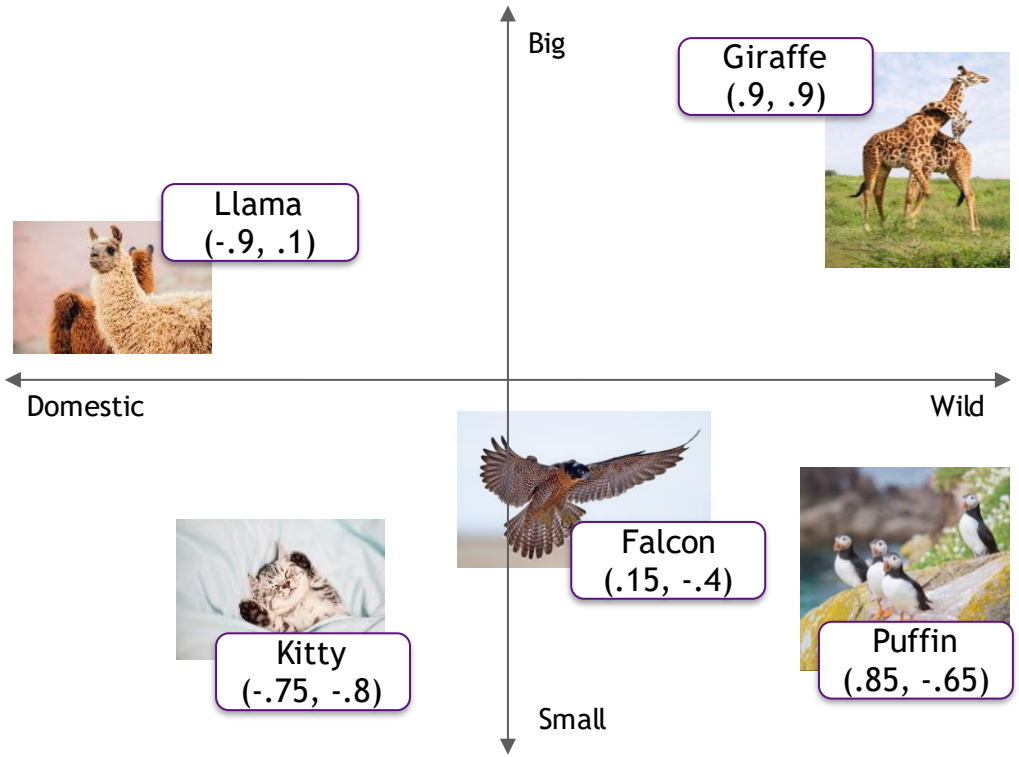
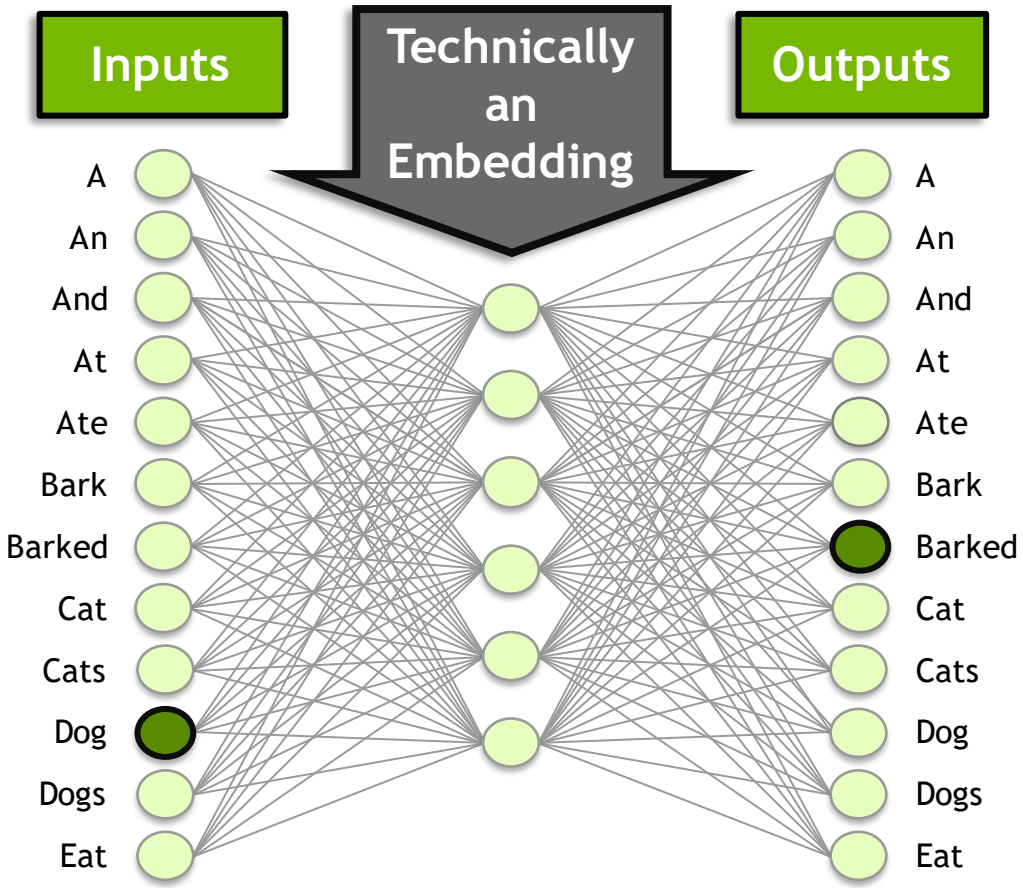


BIGGER DICTIONARY

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		

FROM WORDS TO NUMBERS



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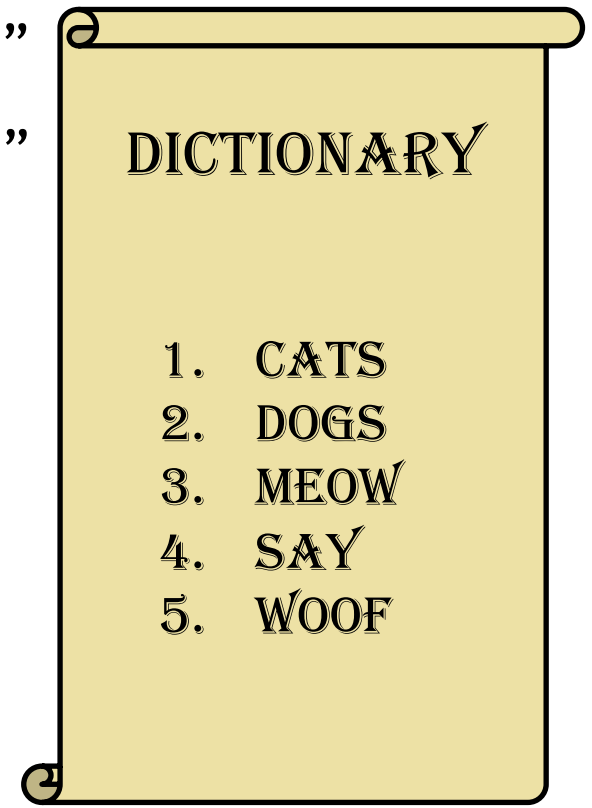
RECURRENT NEURAL NETWORKS

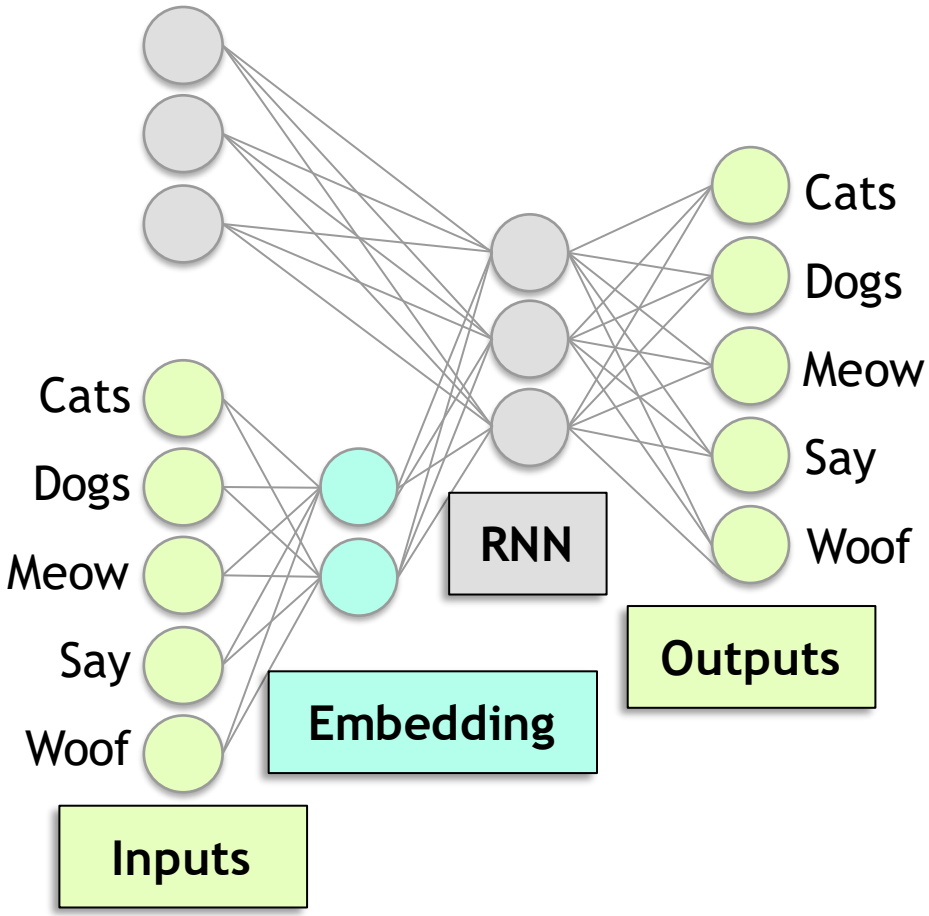
RECURRENT NEURAL NETWORKS

"Cats say ___."

"Dogs say ___."

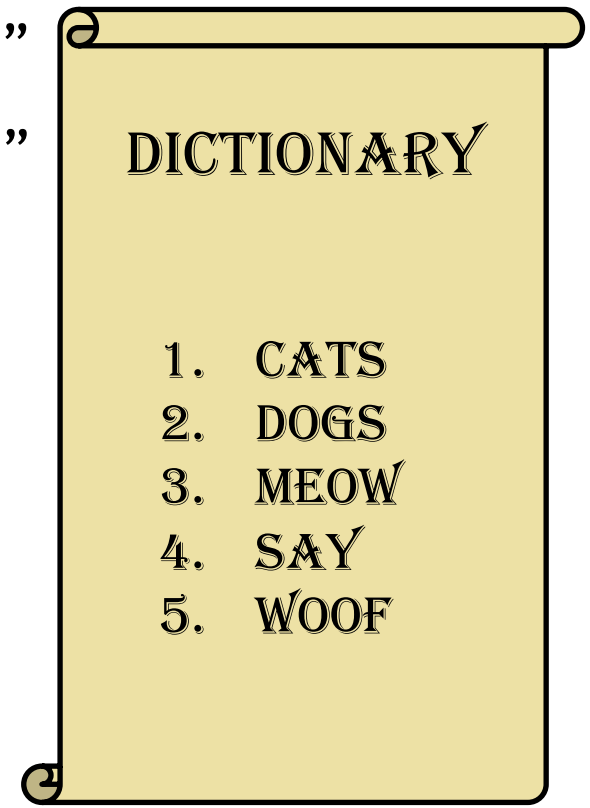


RECURRENT NEURAL NETWORKS

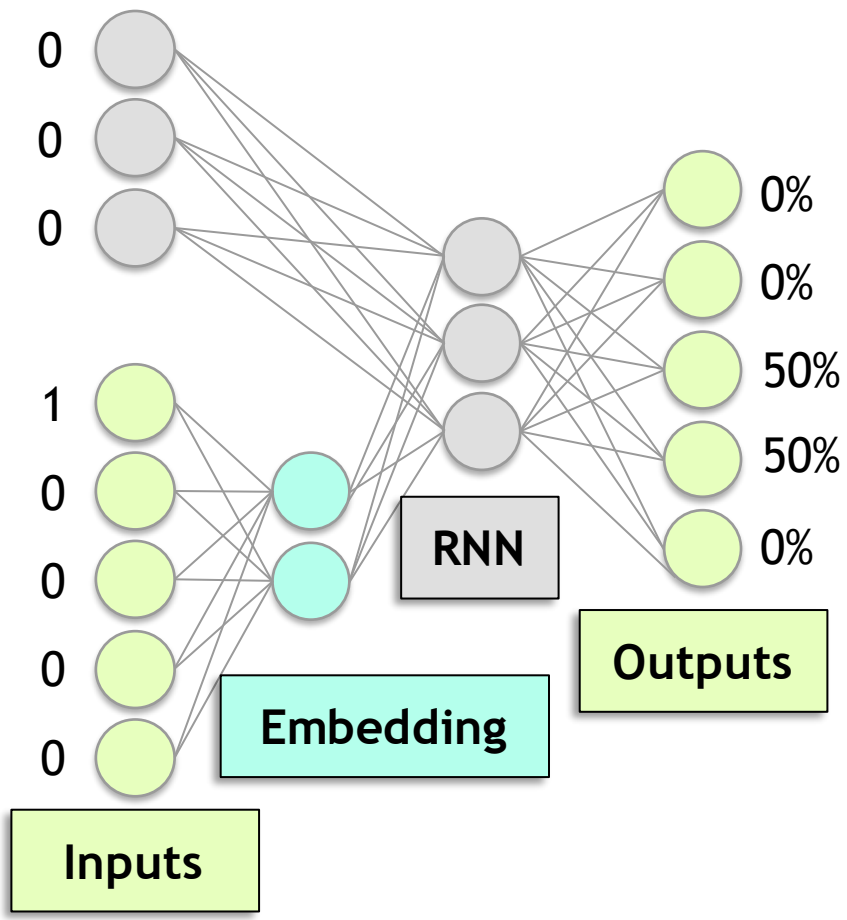


“Cats say ____.”

“Dogs say ____.”



RECURRENT NEURAL NETWORKS



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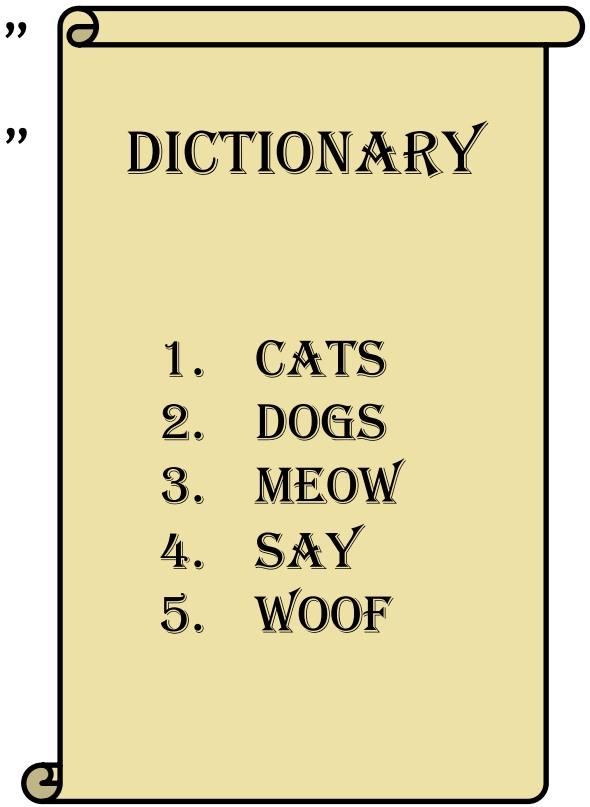
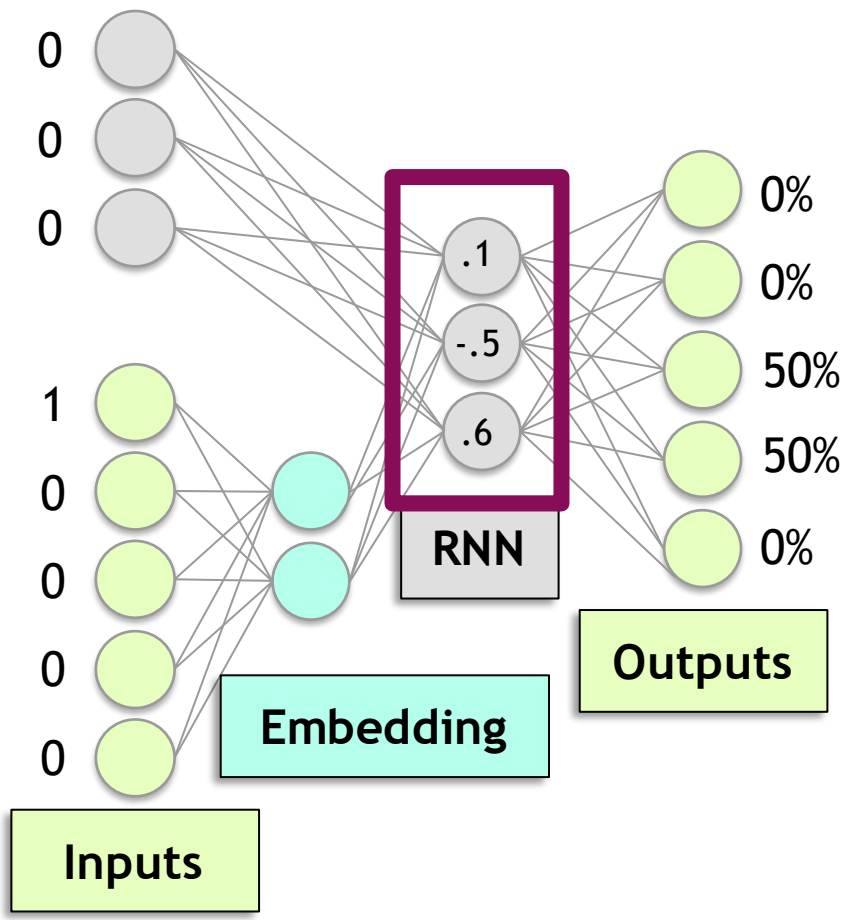


RECURRENT NEURAL NETWORKS



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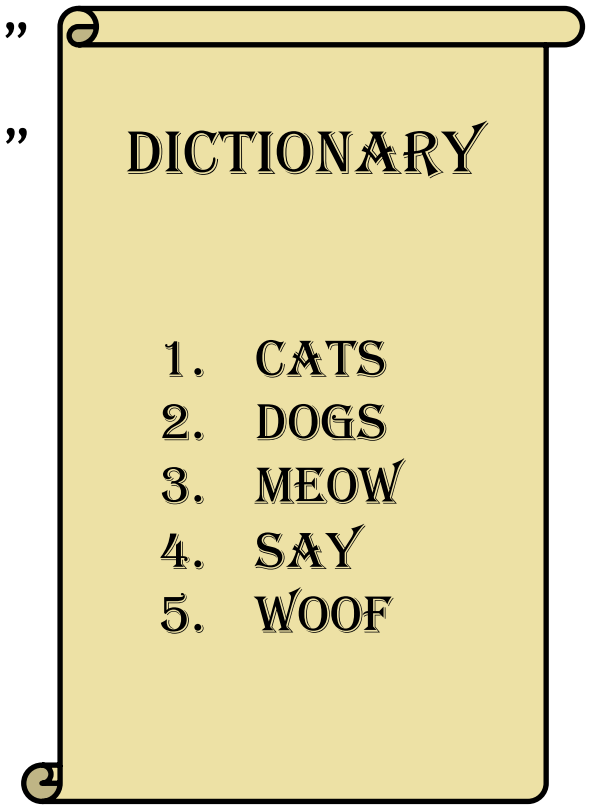

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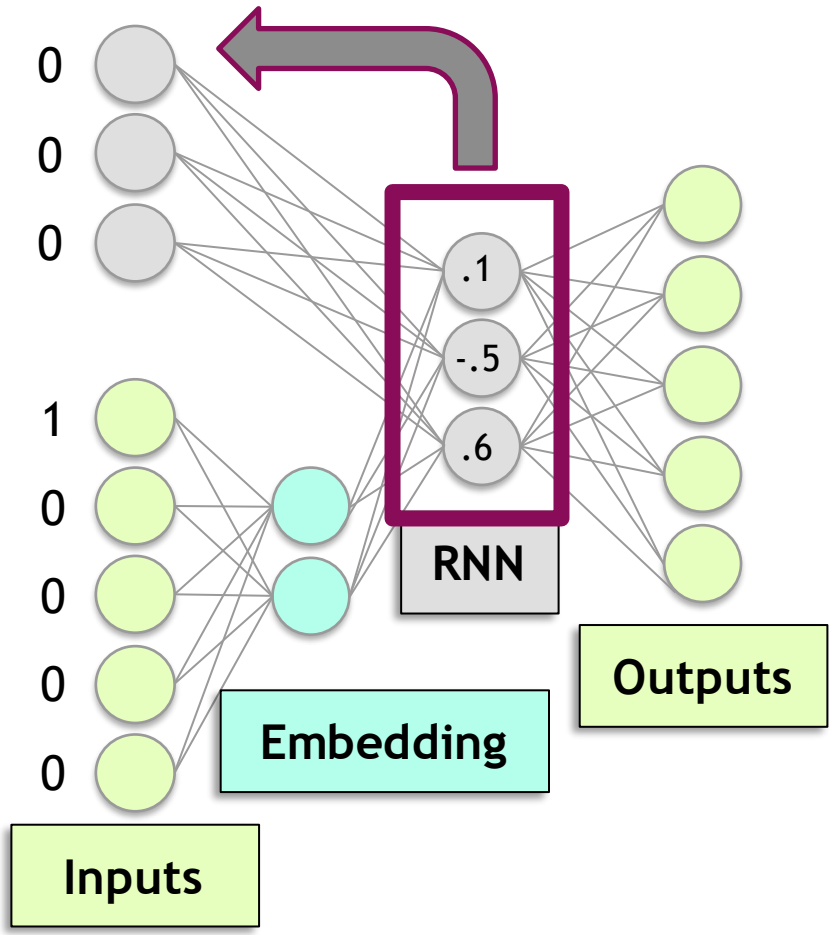

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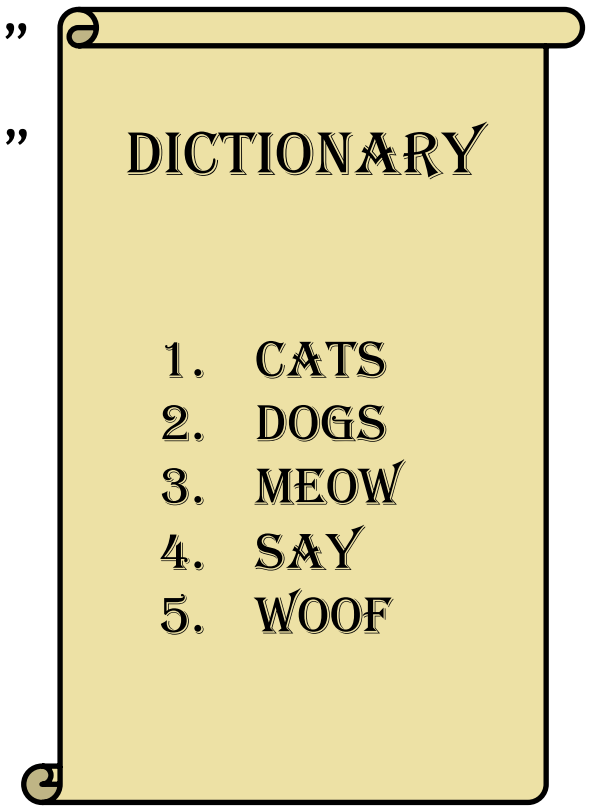
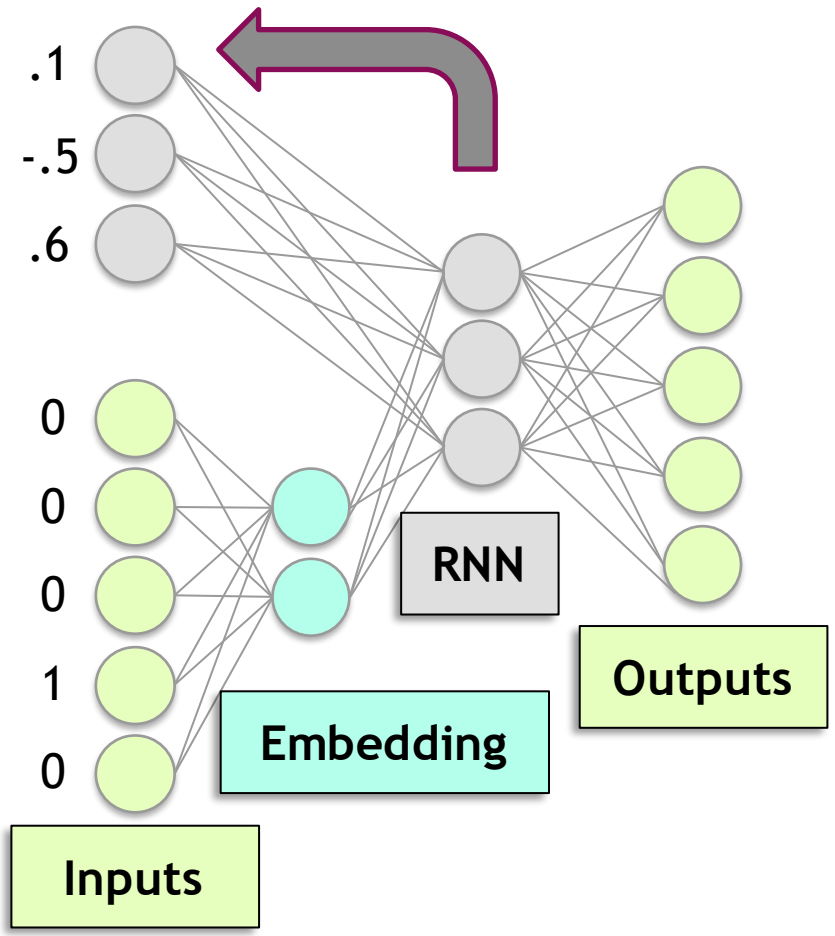


RECURRENT NEURAL NETWORKS



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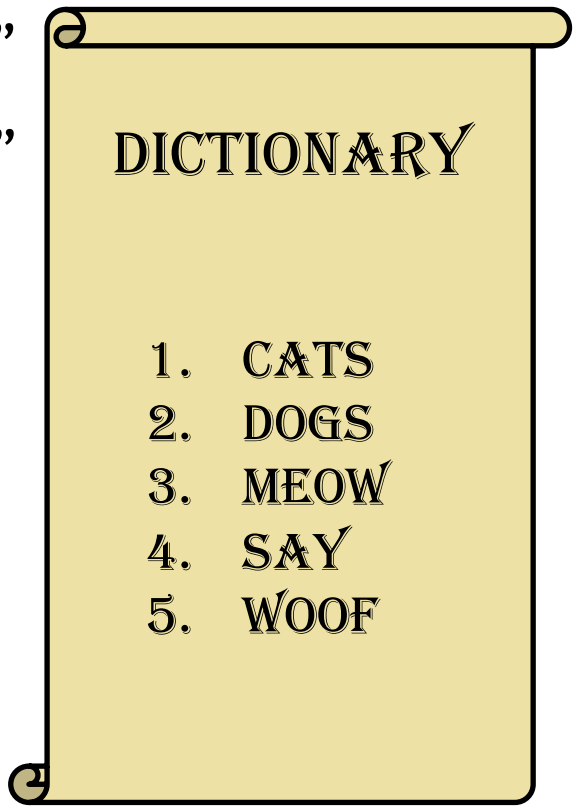

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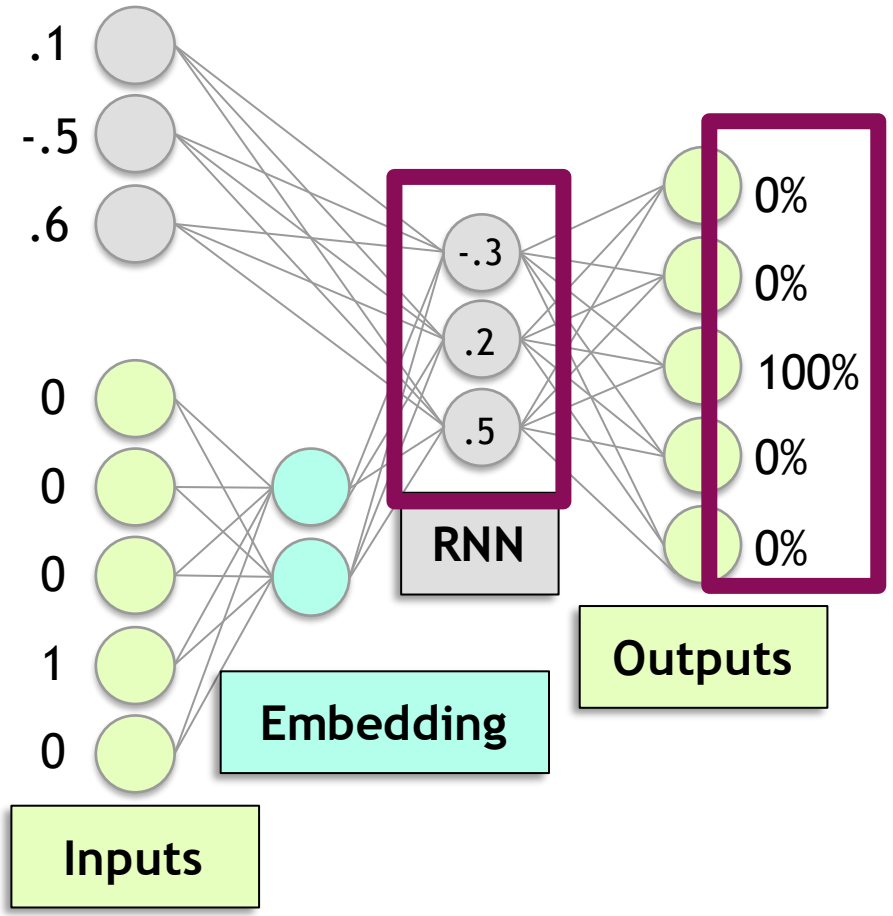

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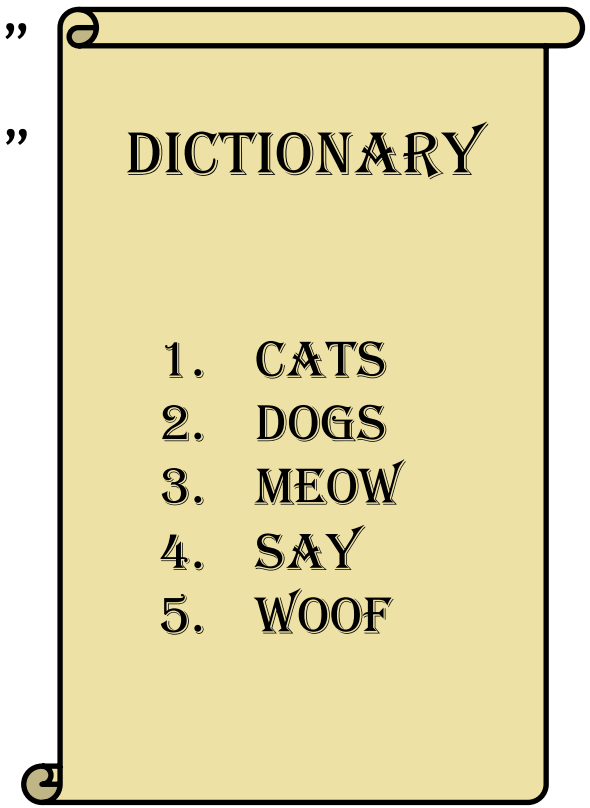
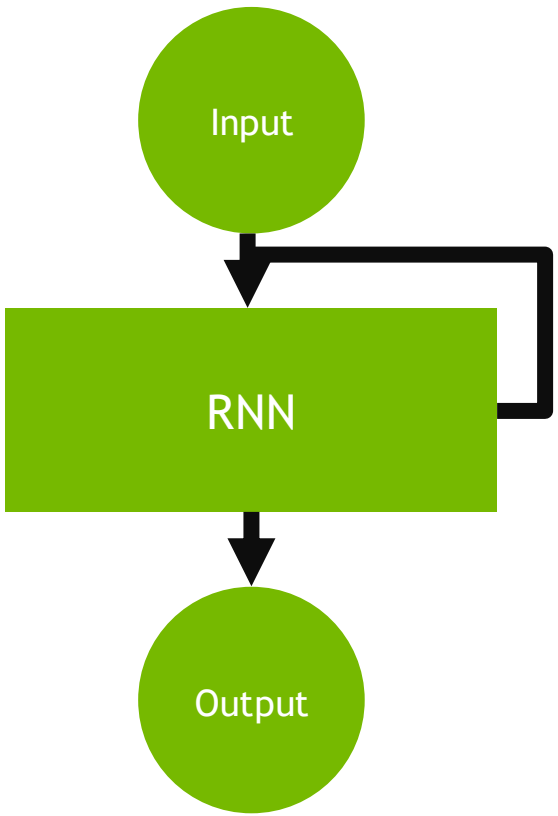
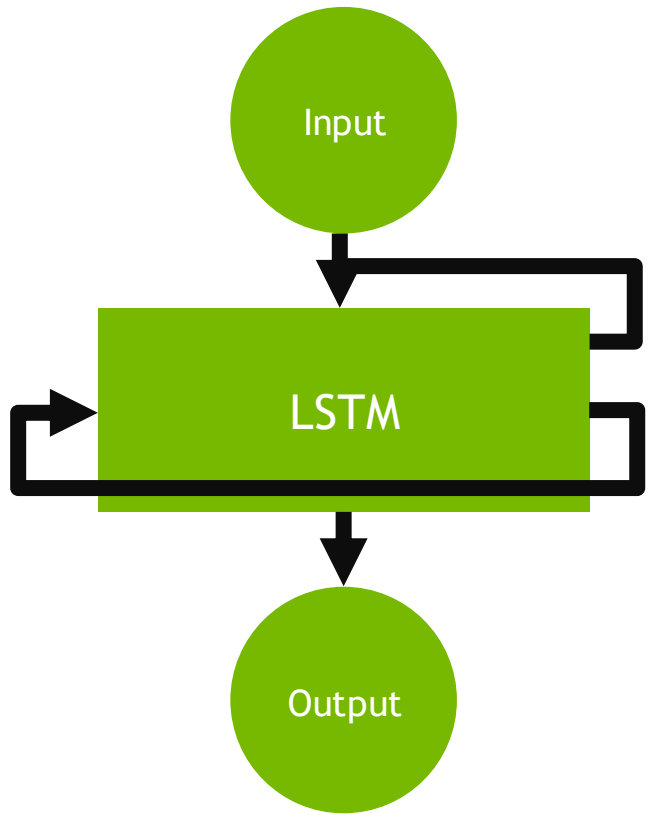


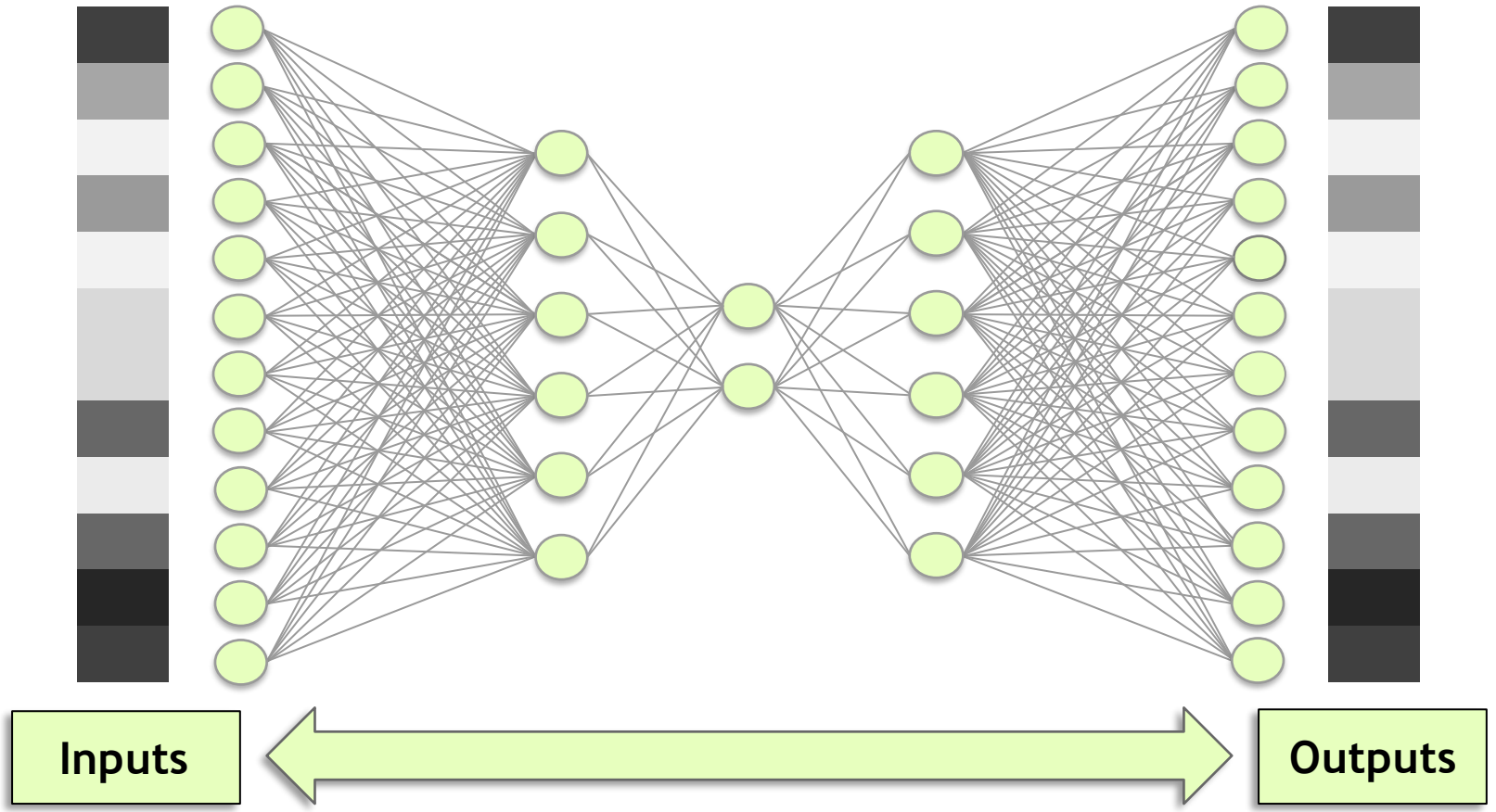
RECURRENT NEURAL NETWORKS





OTHER ARCHITECTURES

AUTOENCODERS



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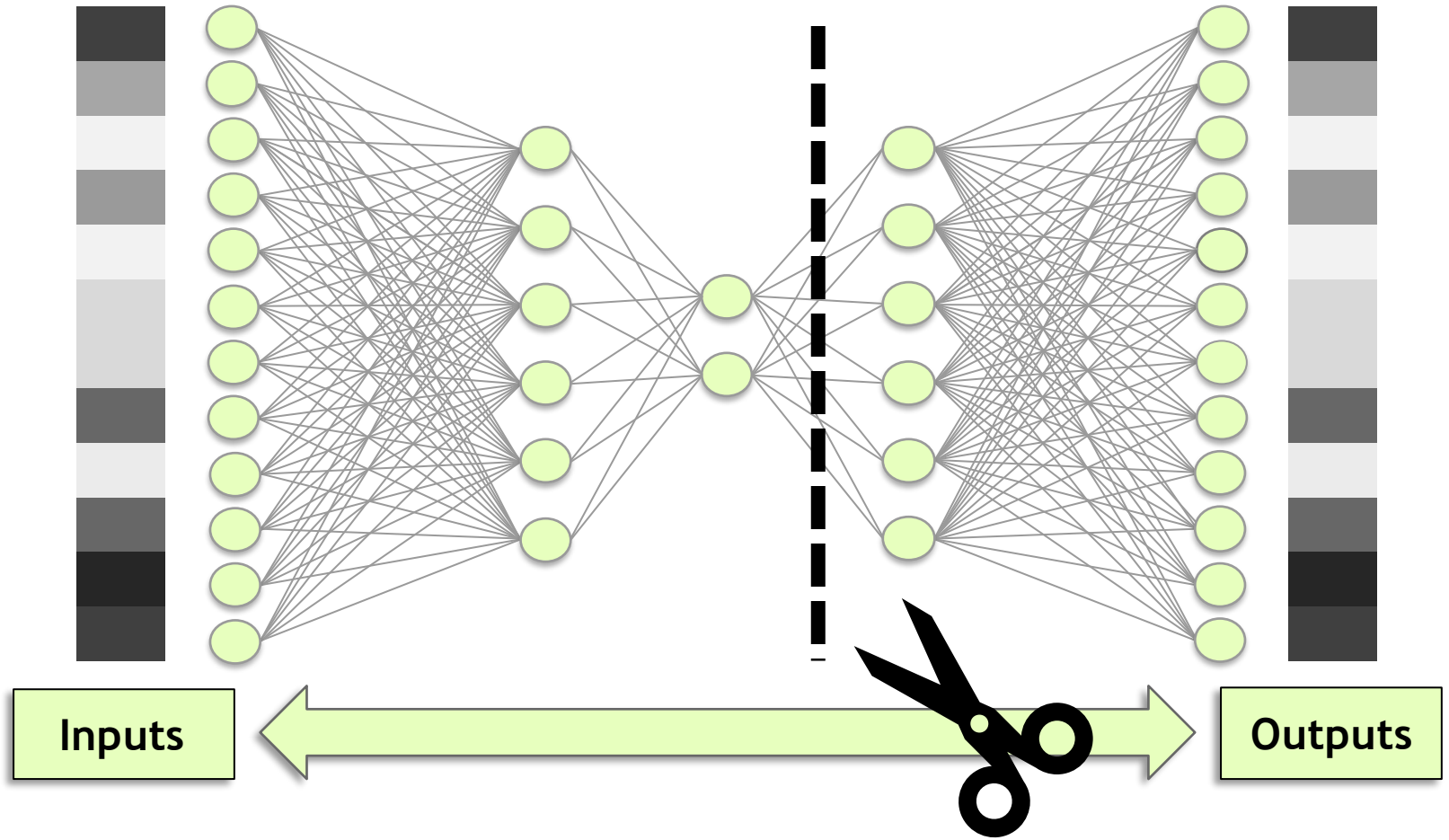

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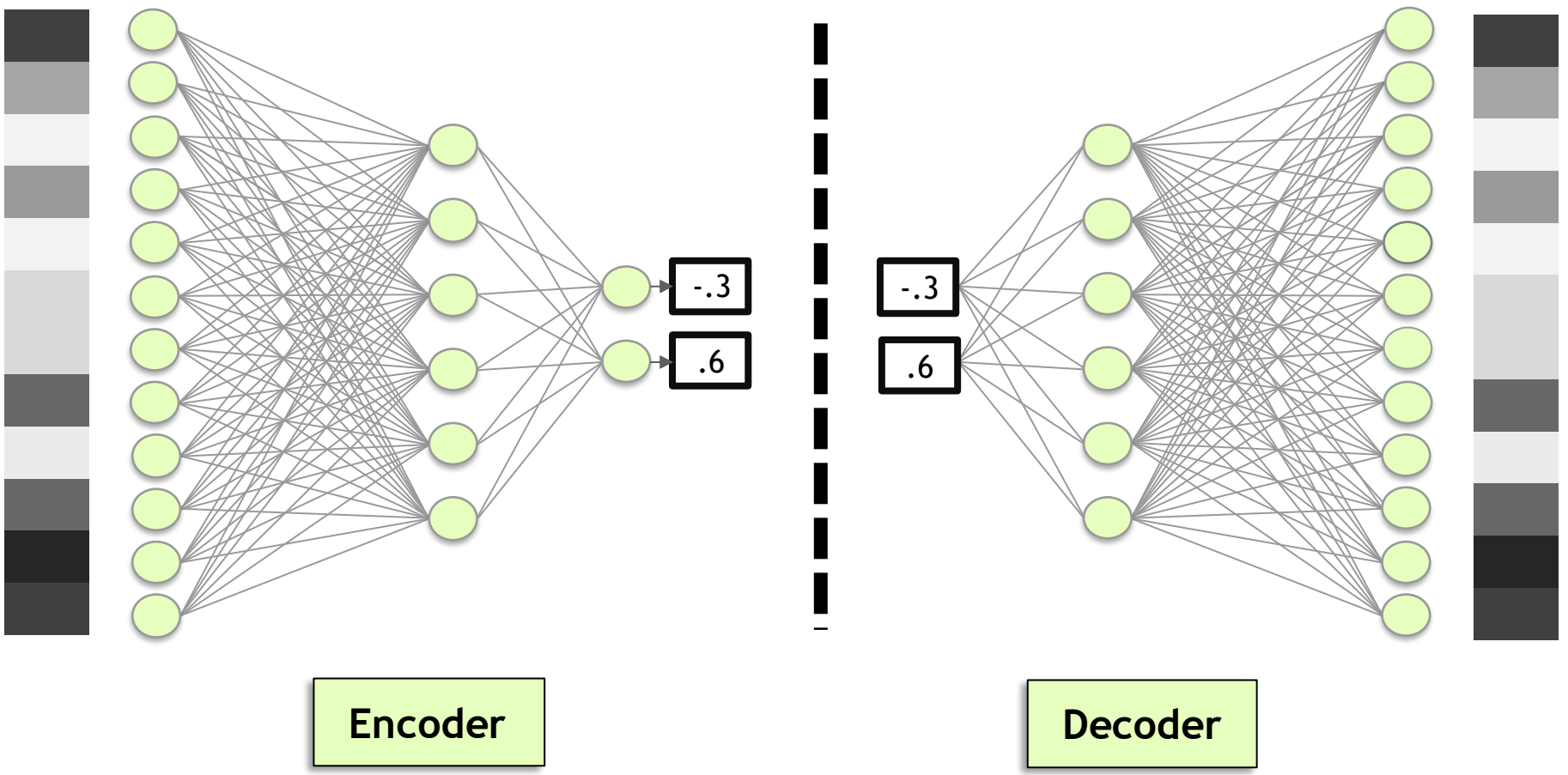
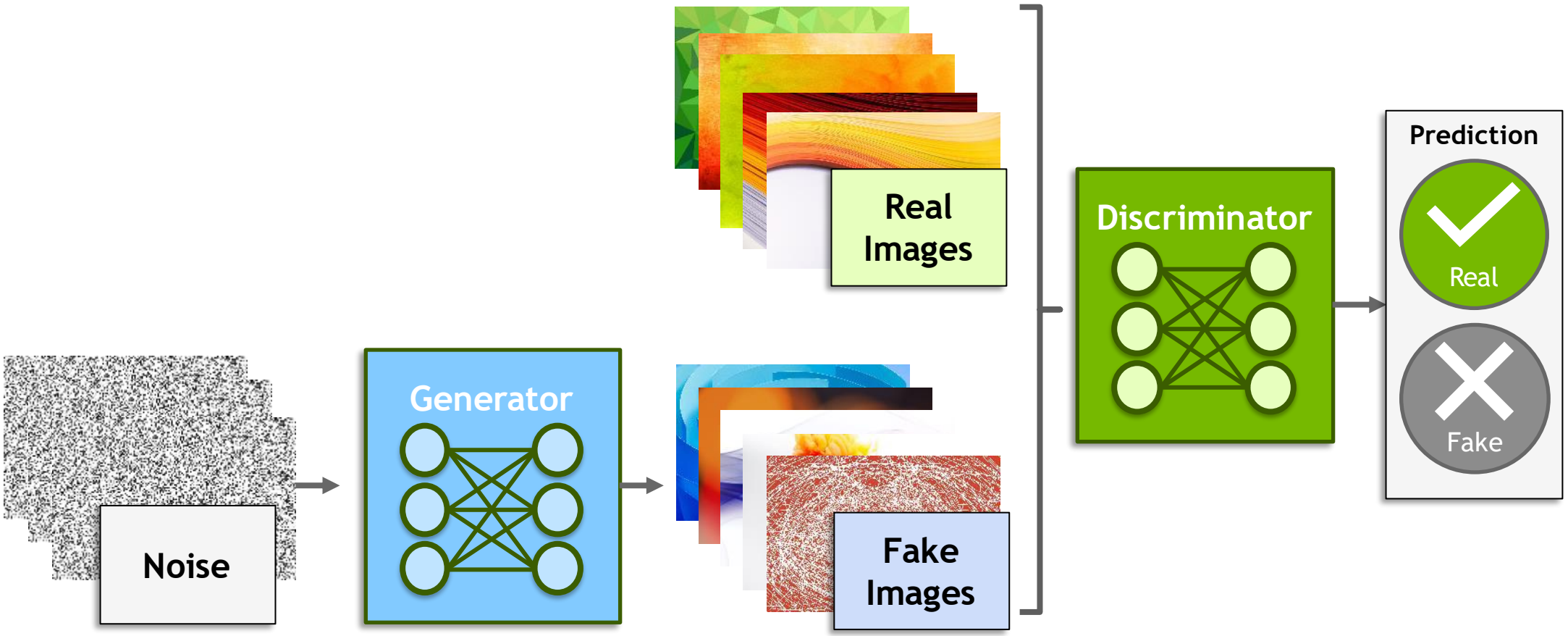
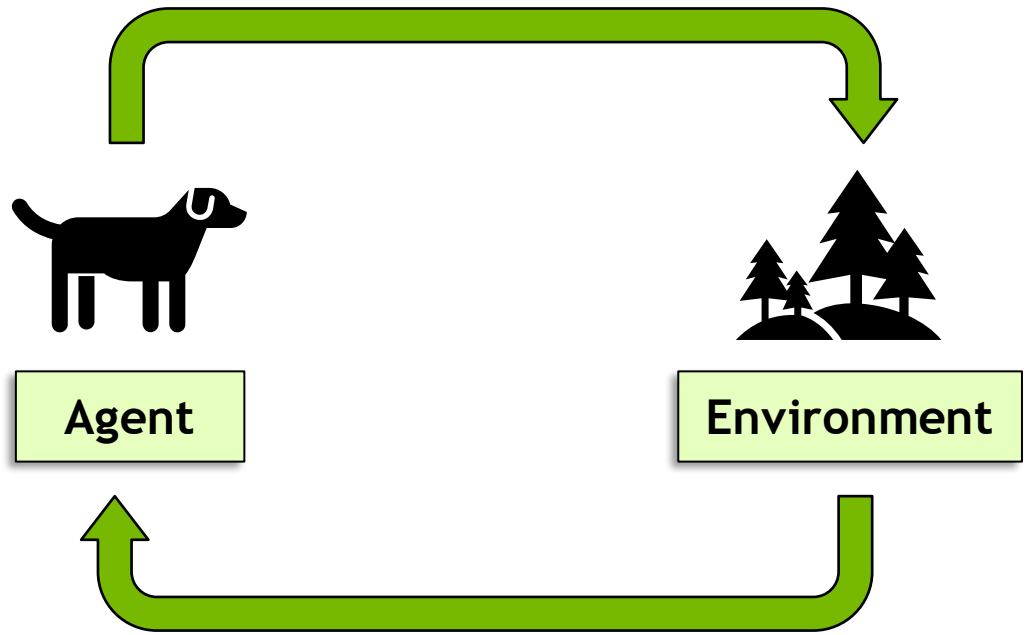


GENERATIVE ADVERSARIAL NETWORKS (GANS)



REINFORCEMENT LEARNING



NEXT STEPS

ENABLING PORTABILITY WITH NGC CONTAINERS

Extensive

- Diverse range of workloads and industry specific use cases

Optimized

- DL containers updated monthly
- Packed with latest features and superior performance

Secure & Reliable

- Scanned for vulnerabilities and crypto
- Tested on workstations, servers, & cloud instances

Scalable

- Supports multi-GPU & multi-node systems

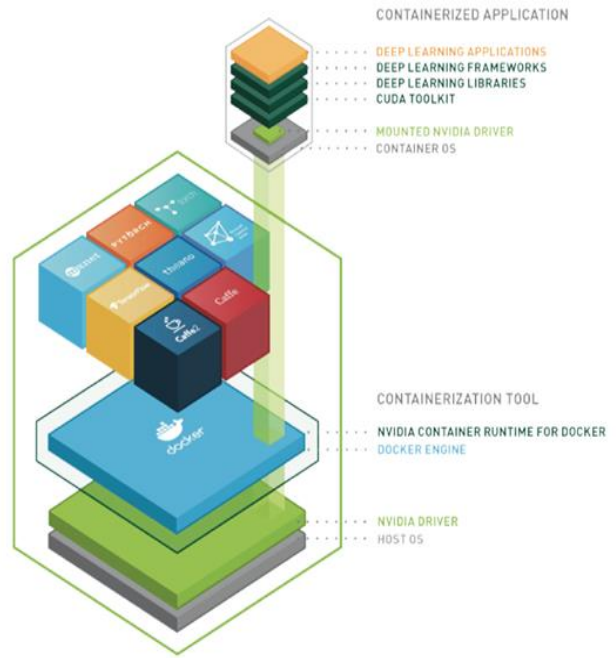
Designed for Enterprise & HPC

- Supports Docker, Singularity & other runtimes

Run Anywhere

- Bare metal, VMs, Kubernetes
- x86, ARM, POWER
- Multi-cloud, on-prem, hybrid, edge

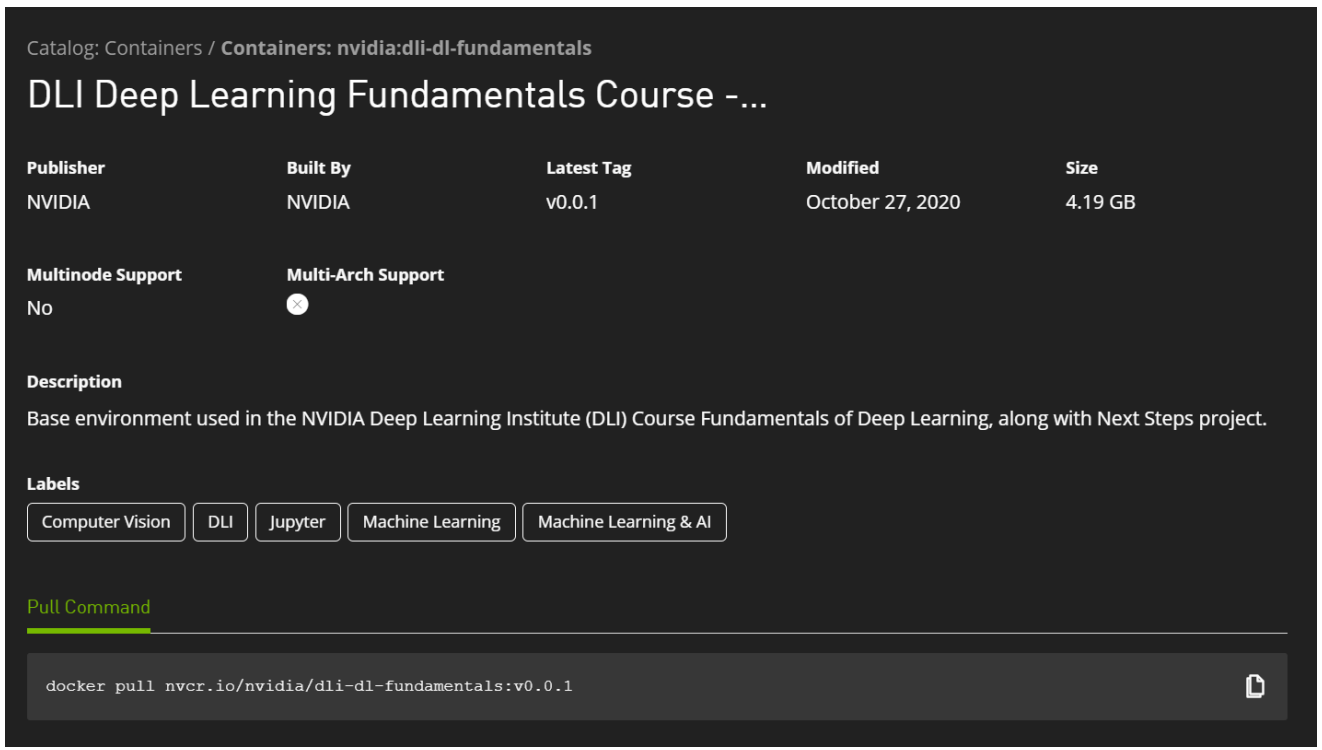
NGC Deep Learning Containers



CONVERSATIONAL AI: Riva | HEALTHCARE: CLARA | SMART CITIES: DEEPSTREAM & SMART PARKING | TELECOM: AERIAL | AUTONOMOUS DRIVING: DRIVE | ROBOTICS: ISAAC | HPC: HPC SDK

Learn more about NGC Containers

NEXT STEPS FOR THIS CLASS



Step 1 Sign up for NGC

https://docs.nvidia.com/dgx/ngc-registry-for-dgx-user-guide/index.html

Step 2 Visit NGC Catalog

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

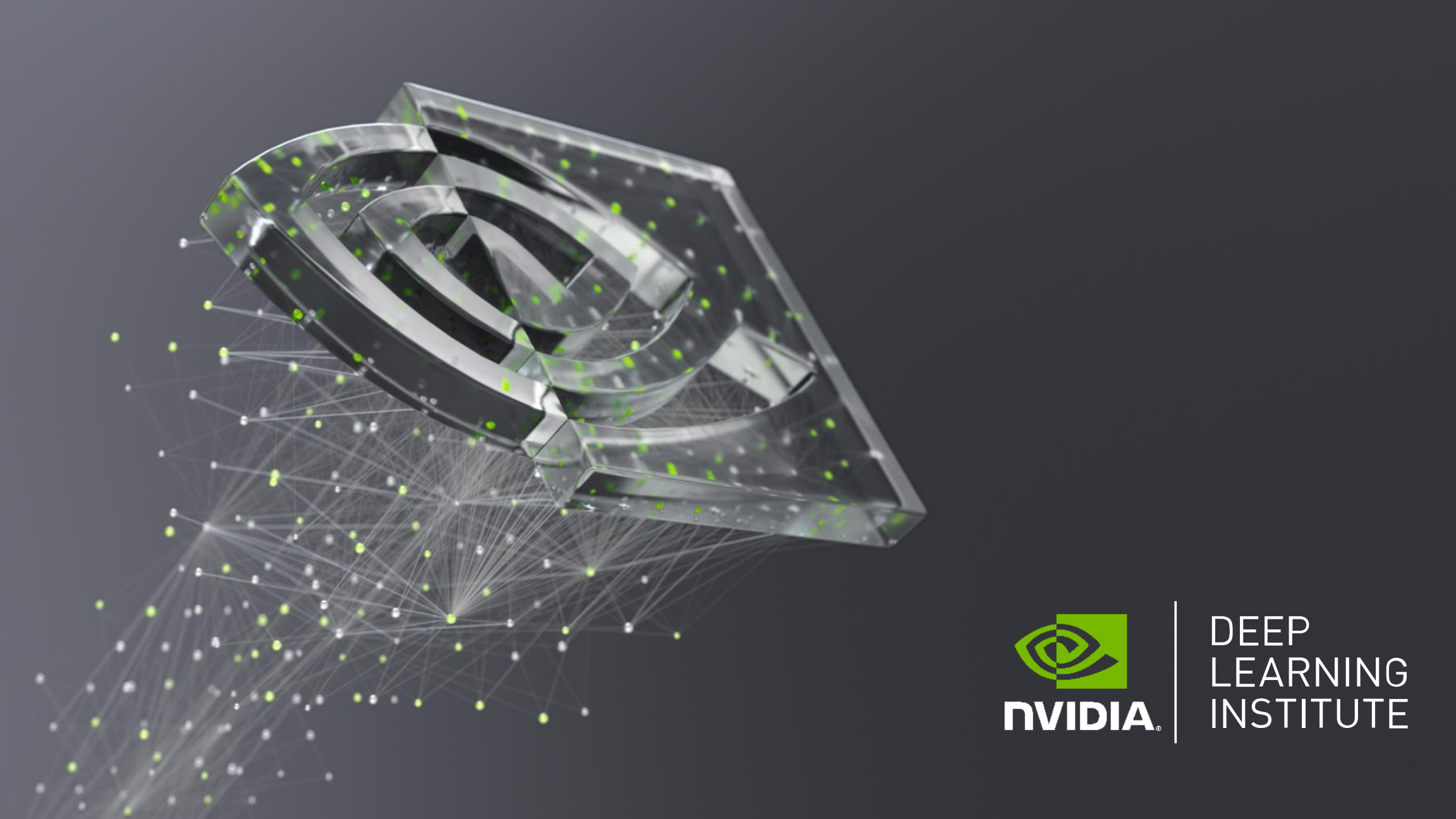
Step 3 Pull and Run Container

Visit localhost:8888 to check out a JupyterLab environment with a Next Steps Project

CLOSING THOUGHTS

COPYING ROCKET SCIENCE


LET’S GET STARTED!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INSTITUTE