

SPEECH RECOGNITION

amazon alexa



"Hey Siri"



"Ok Google"

NATURAL LANGUAGE PROCESSING (NLP)

machine translation



question answering



Google Analytics

chatbots



TIME SERIES PREDICTION

traffic patterns



movie selection

NETFLIX

stock movement
and market conditions



| practiced by hedge funds

GESTURE RECOGNITION

QUALCOMM

Cognitec

eyeSight

GesturaTek

cognivue

GEST SURE

intel

omek

PointGrab

Intelligent



RNN - EXAMPLE

One-hot Vector Encoding

a	1	0	0	0	0	0	0
c	0	1	0	0	0	0	0
d	0	0	1	0	0	0	0
i	0	0	0	1	0	0	0
t	0	0	0	0	1	0	0
u	0	0	0	0	0	1	0
y	0	0	0	0	0	0	1
	a	c	d	i	t	u	y

RNN - EXAMPLE



RNN - EXAMPLE



Threshold > 0.9

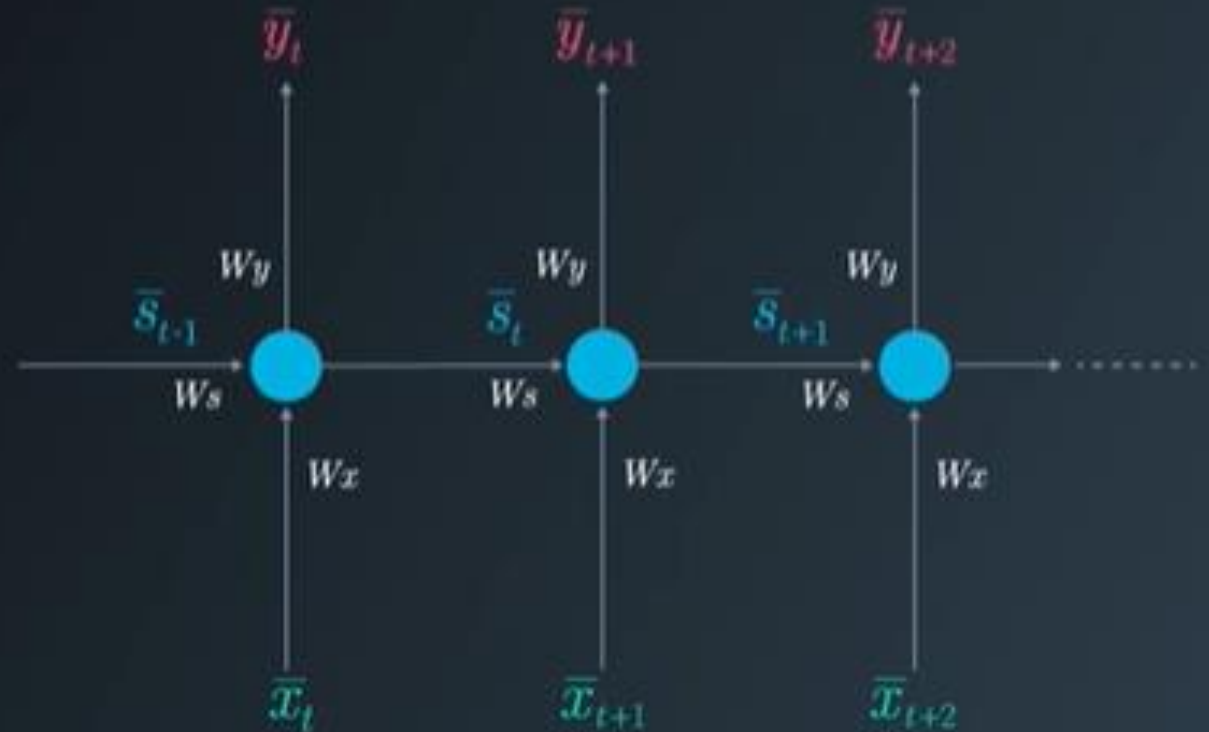
RECURRENT NEURAL NETWORKS

SUMMARY

'Folded' Model



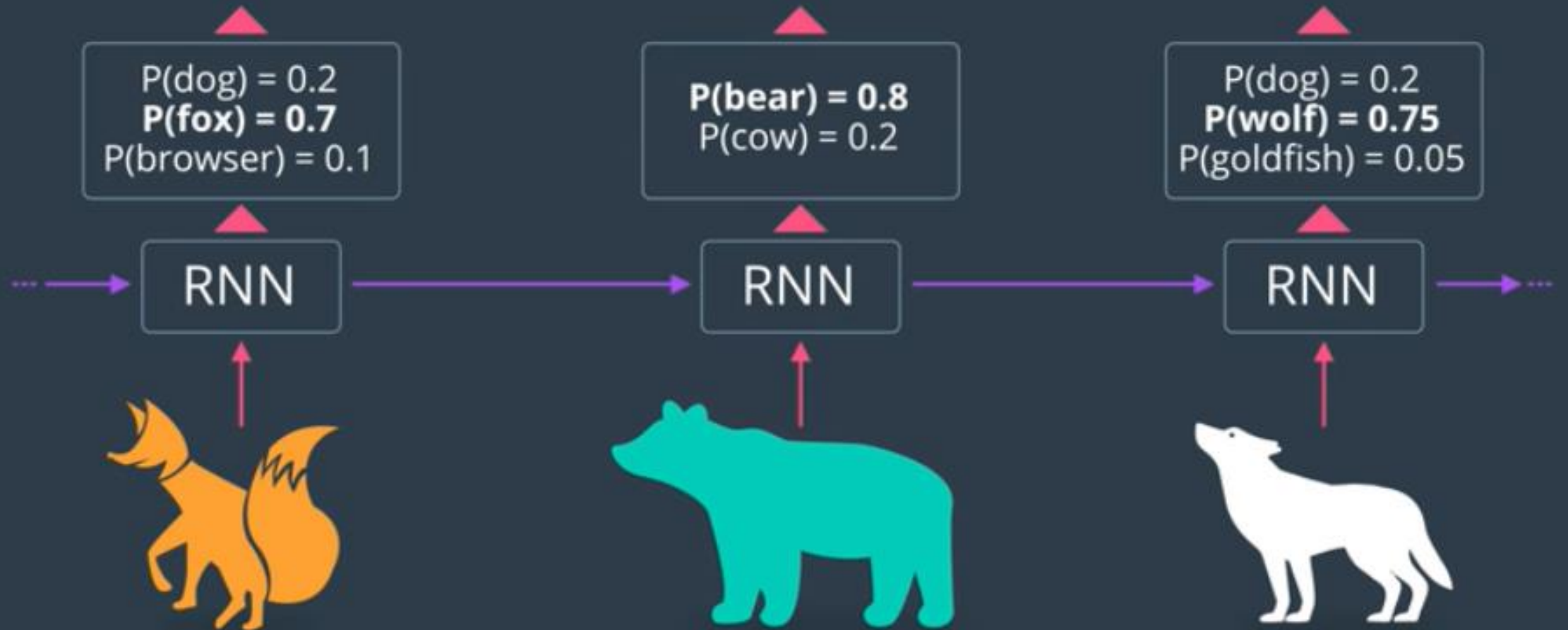
'Unfolded' Model



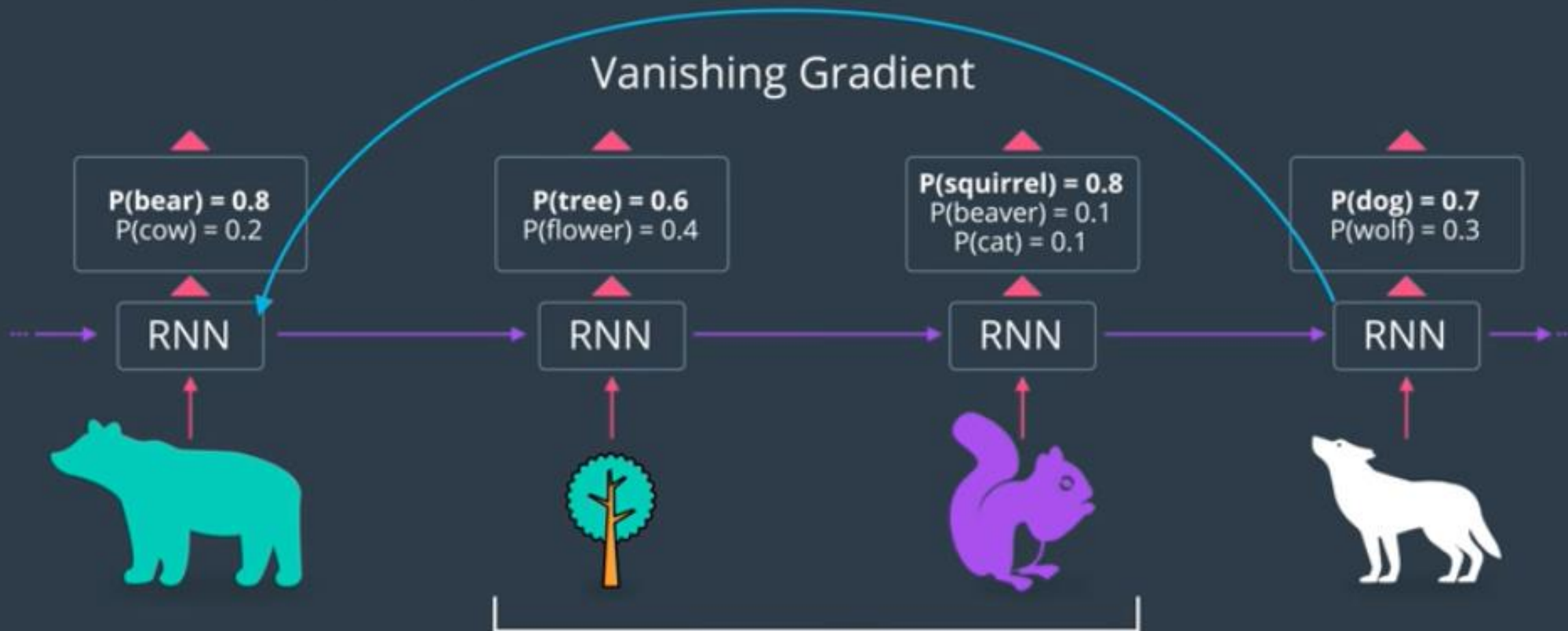
Neural Network



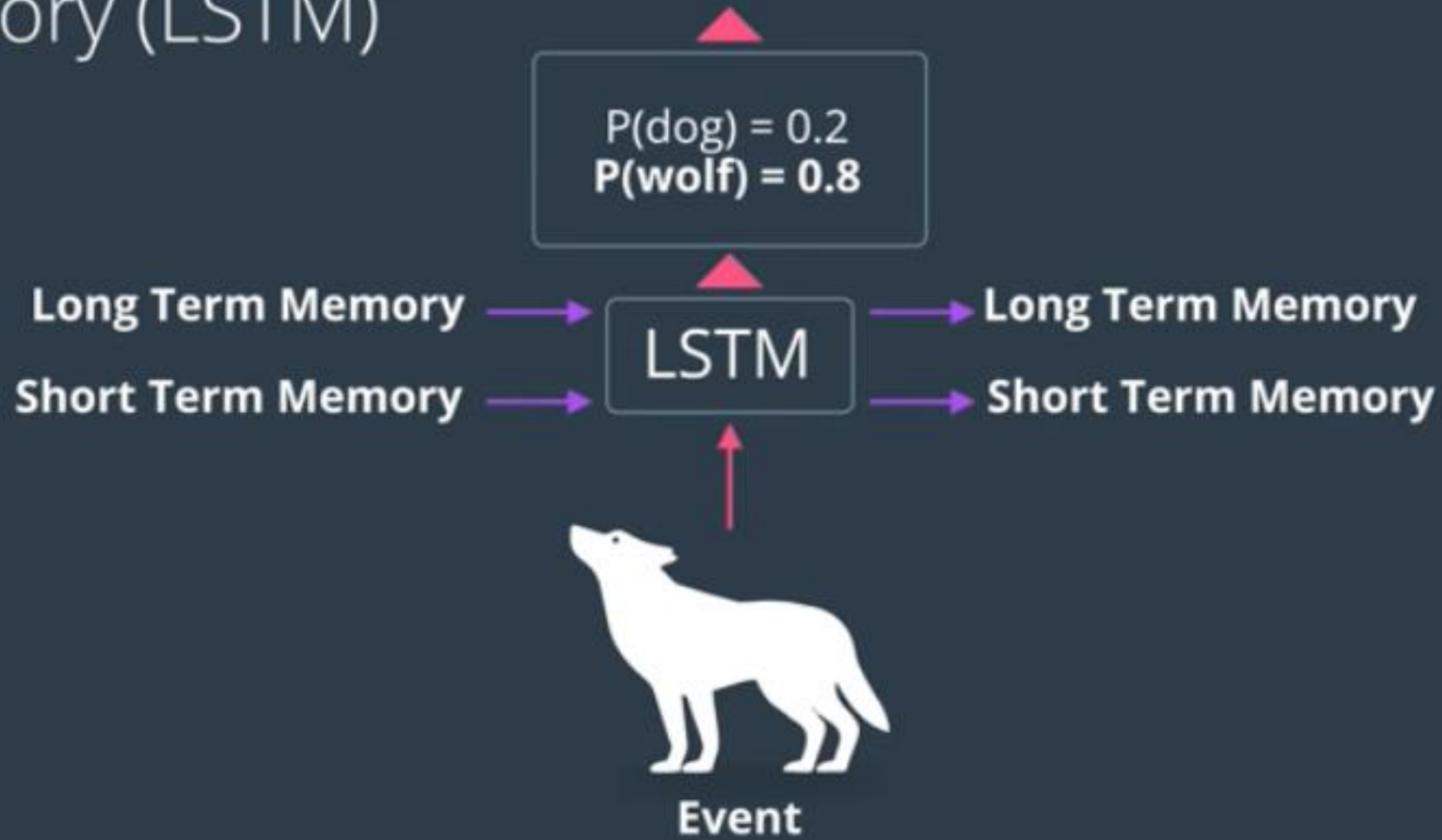
Recurrent Neural Network (RNN)



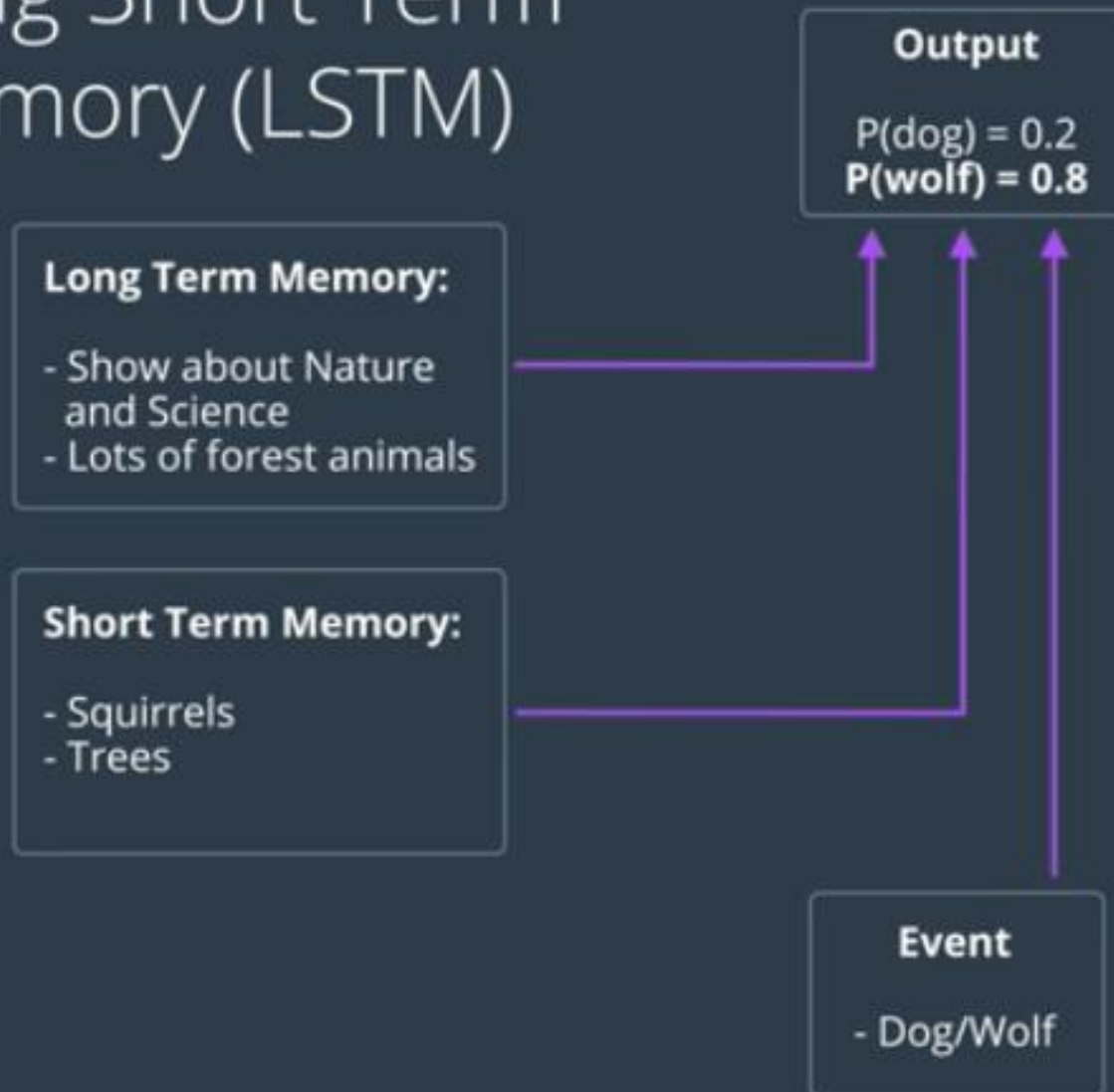
Recurrent Neural Network (RNN)



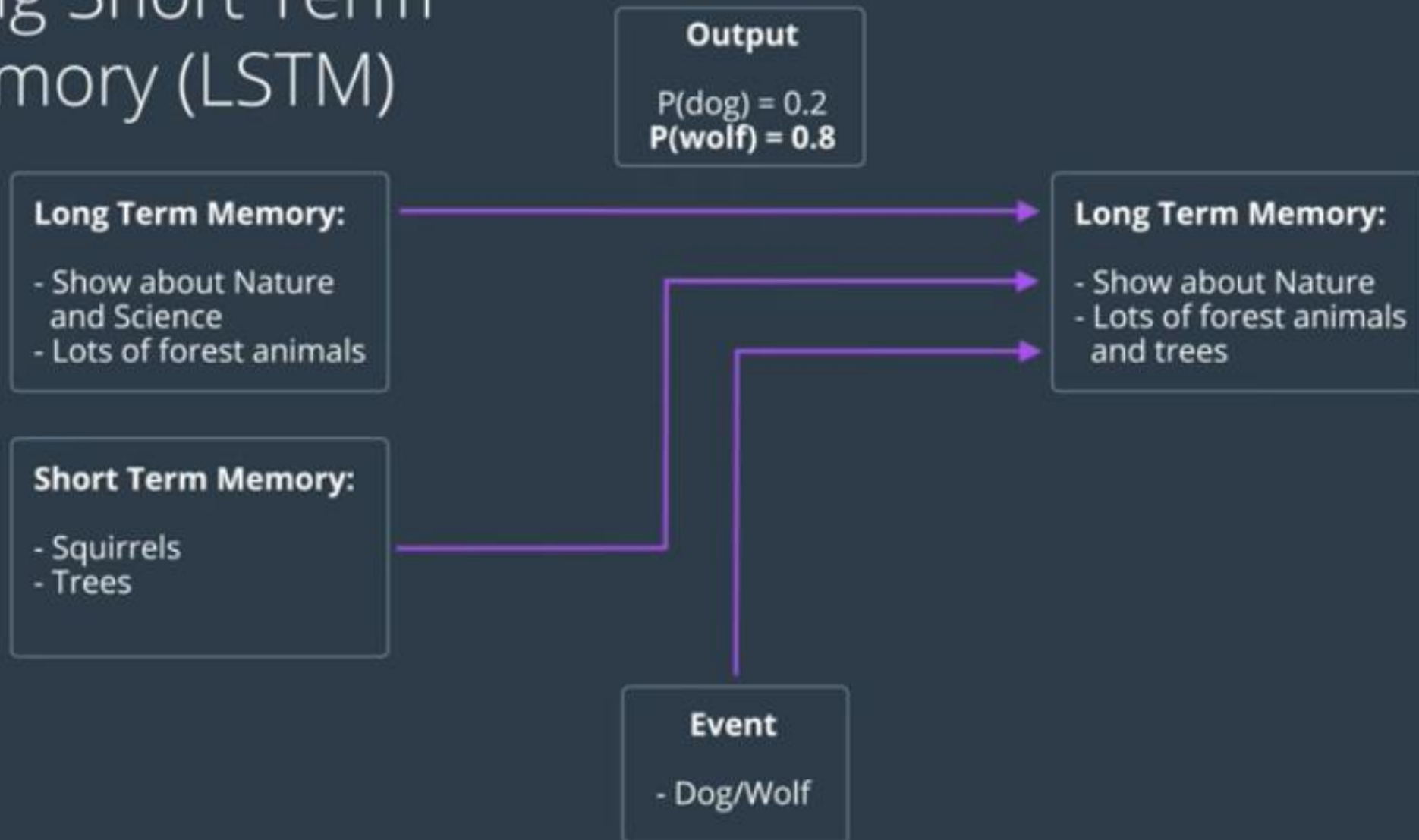
Long Short Term Memory (LSTM)



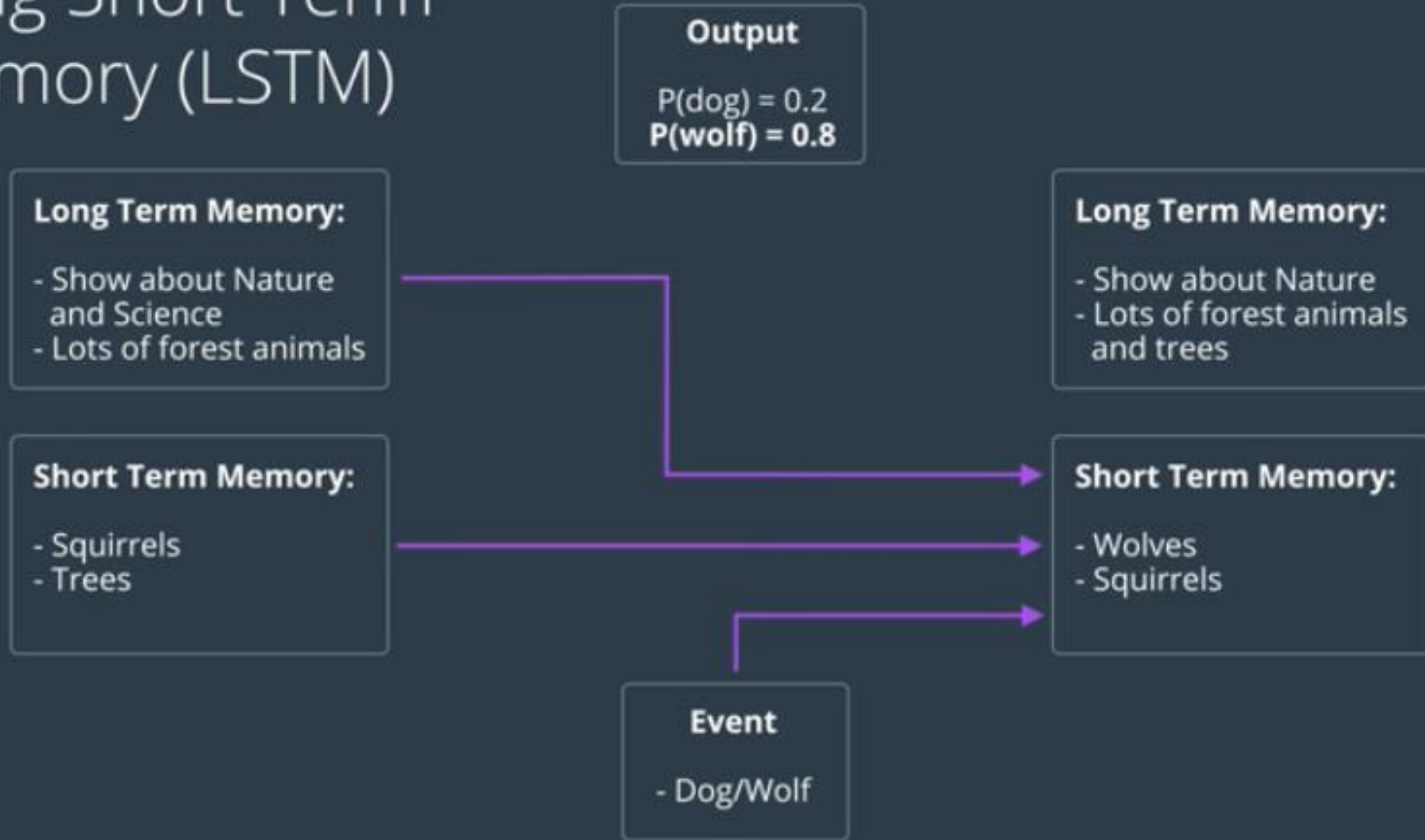
Long Short Term Memory (LSTM)



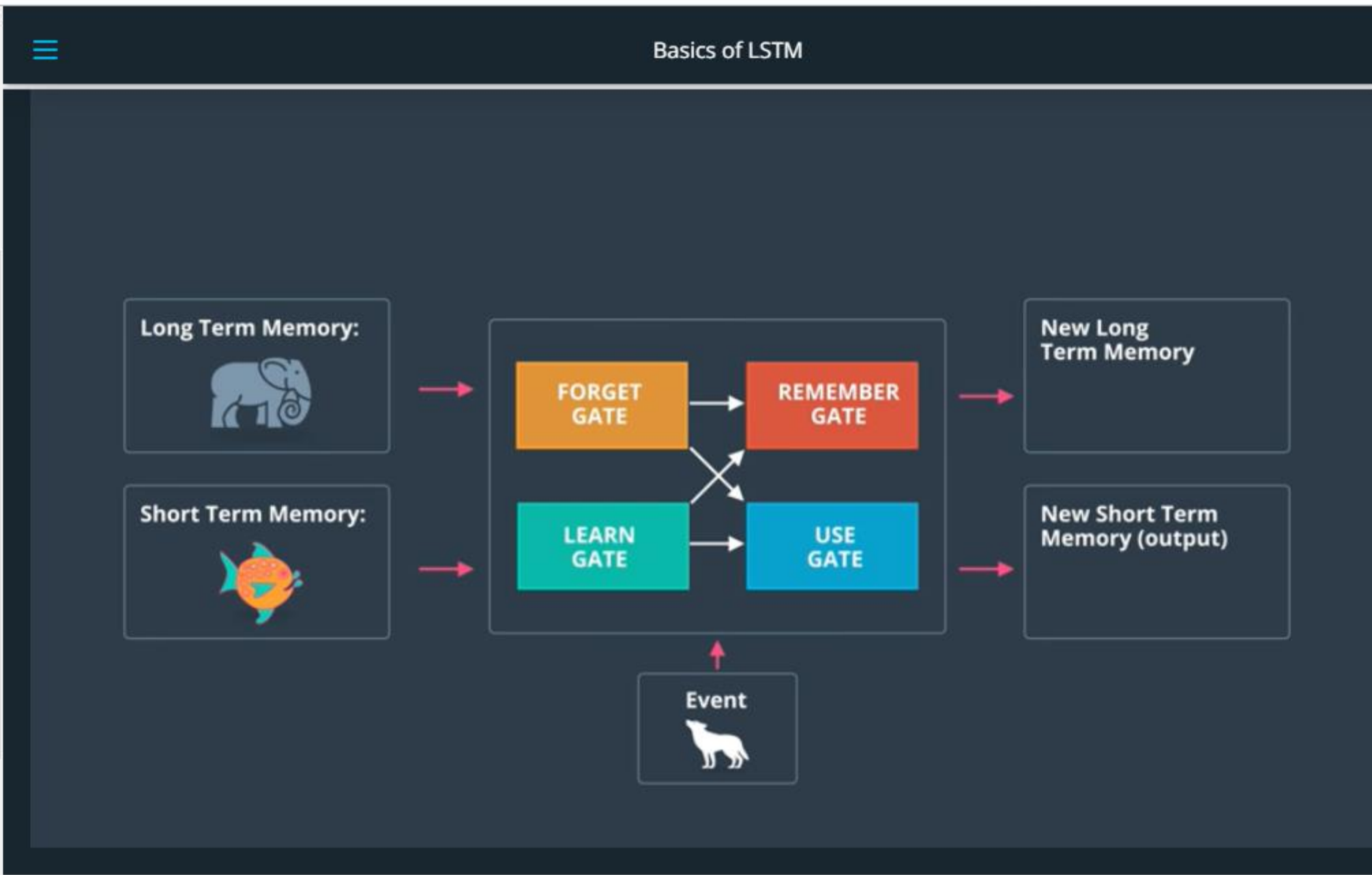
Long Short Term Memory (LSTM)



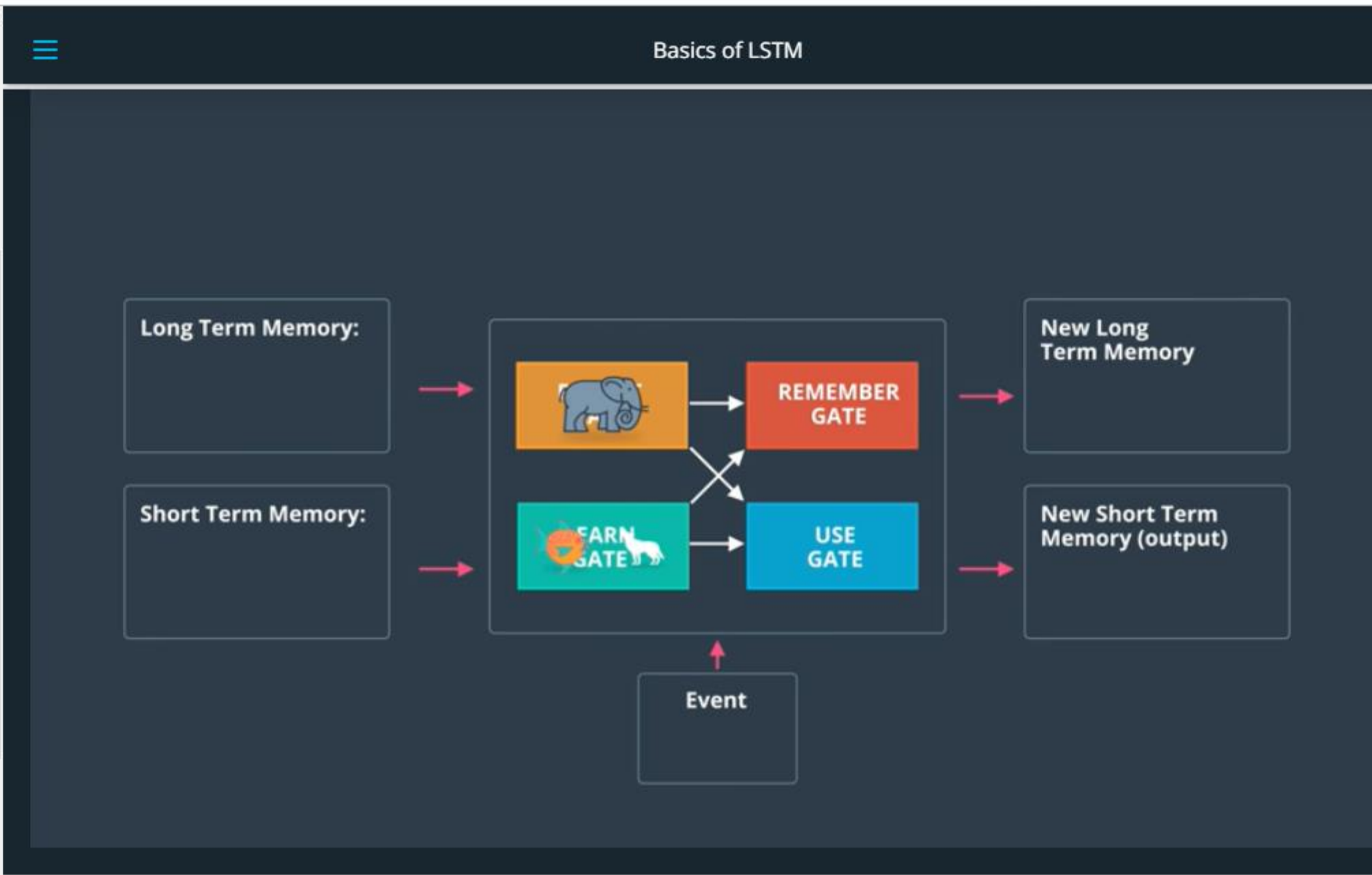
Long Short Term Memory (LSTM)



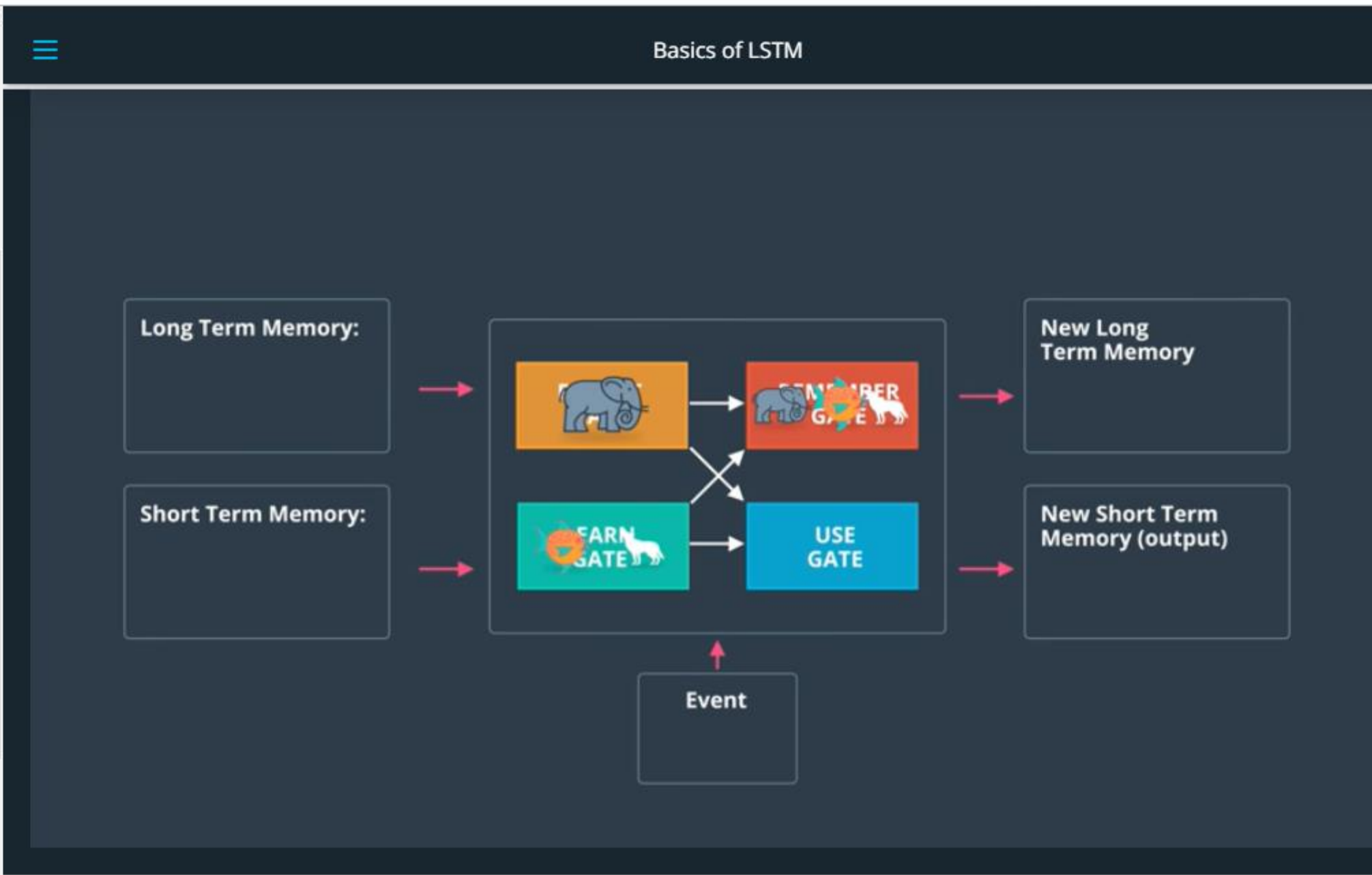
- 2. RNN vs LSTM
- 3. Basics of LSTM**
- 4. Architecture of LSTM
- 5. The Learn Gate
- 6. The Forget Gate
- 7. The Remember Gate
- 8. The Use Gate
- 9. Putting it All Together
- 10. Quiz
- 11. Other architectures
- 12. Outro LSTM



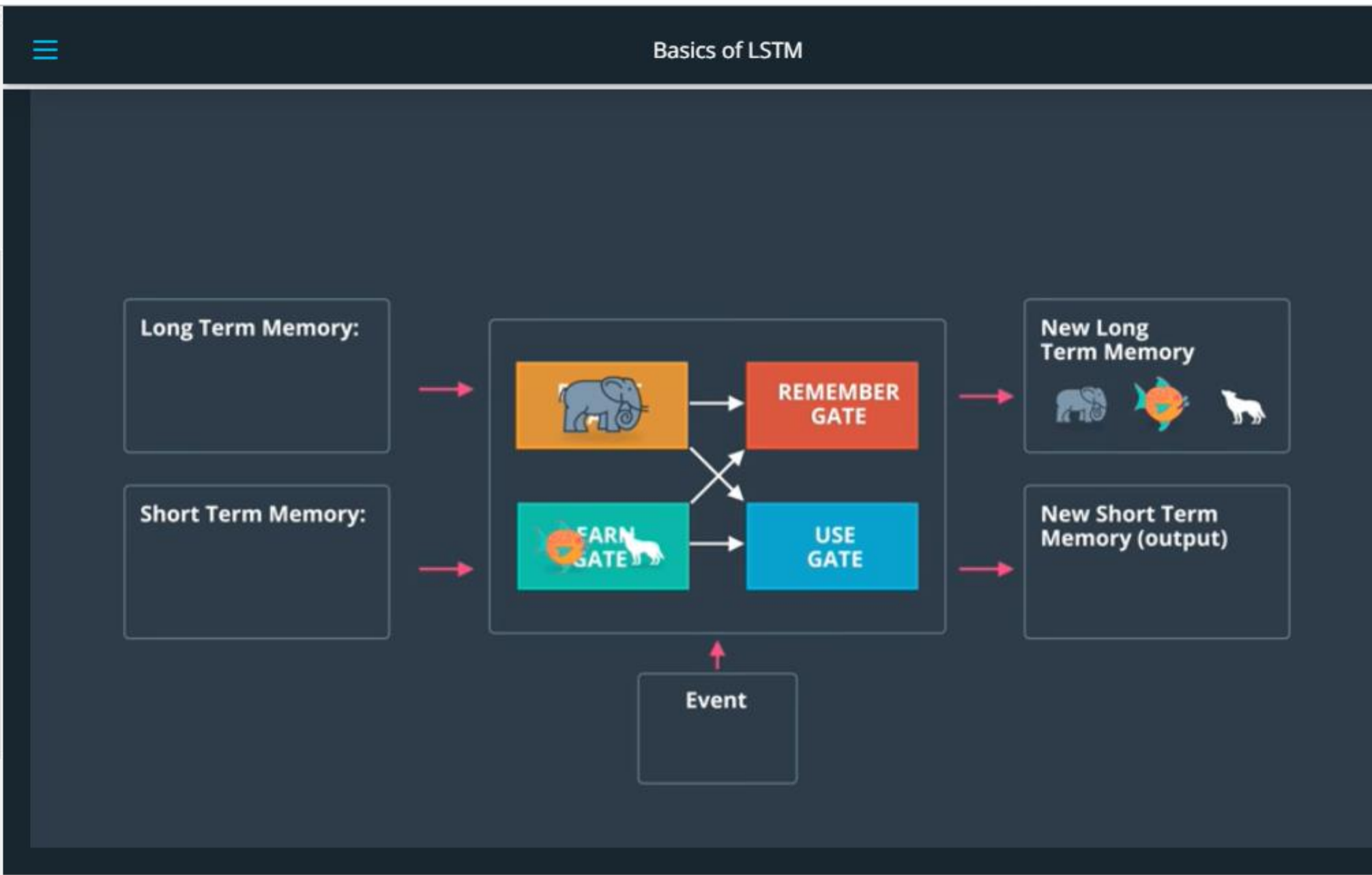
- 2. RNN vs LSTM
- 3. Basics of LSTM**
- 4. Architecture of LSTM
- 5. The Learn Gate
- 6. The Forget Gate
- 7. The Remember Gate
- 8. The Use Gate
- 9. Putting it All Together
- 10. Quiz
- 11. Other architectures
- 12. Outro LSTM

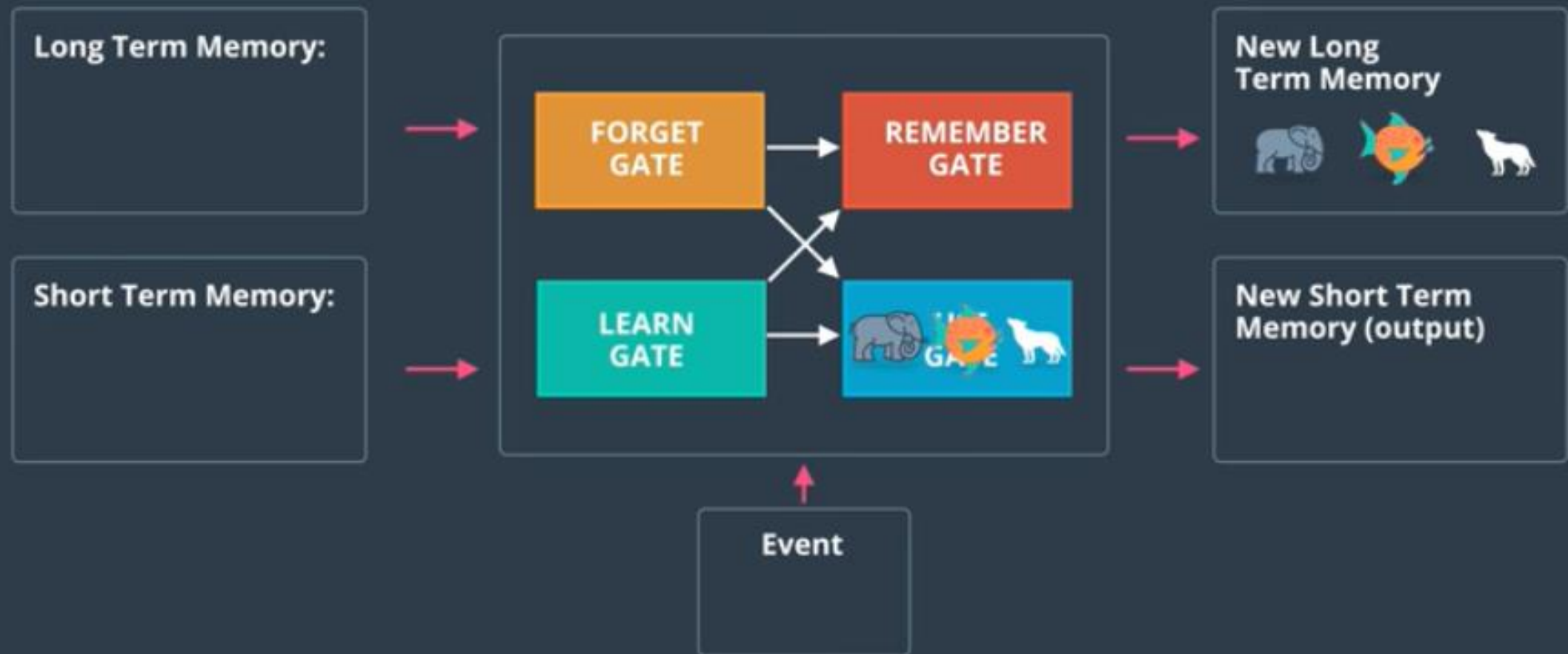


- 2. RNN vs LSTM
- 3. Basics of LSTM**
- 4. Architecture of LSTM
- 5. The Learn Gate
- 6. The Forget Gate
- 7. The Remember Gate
- 8. The Use Gate
- 9. Putting it All Together
- 10. Quiz
- 11. Other architectures
- 12. Outro LSTM

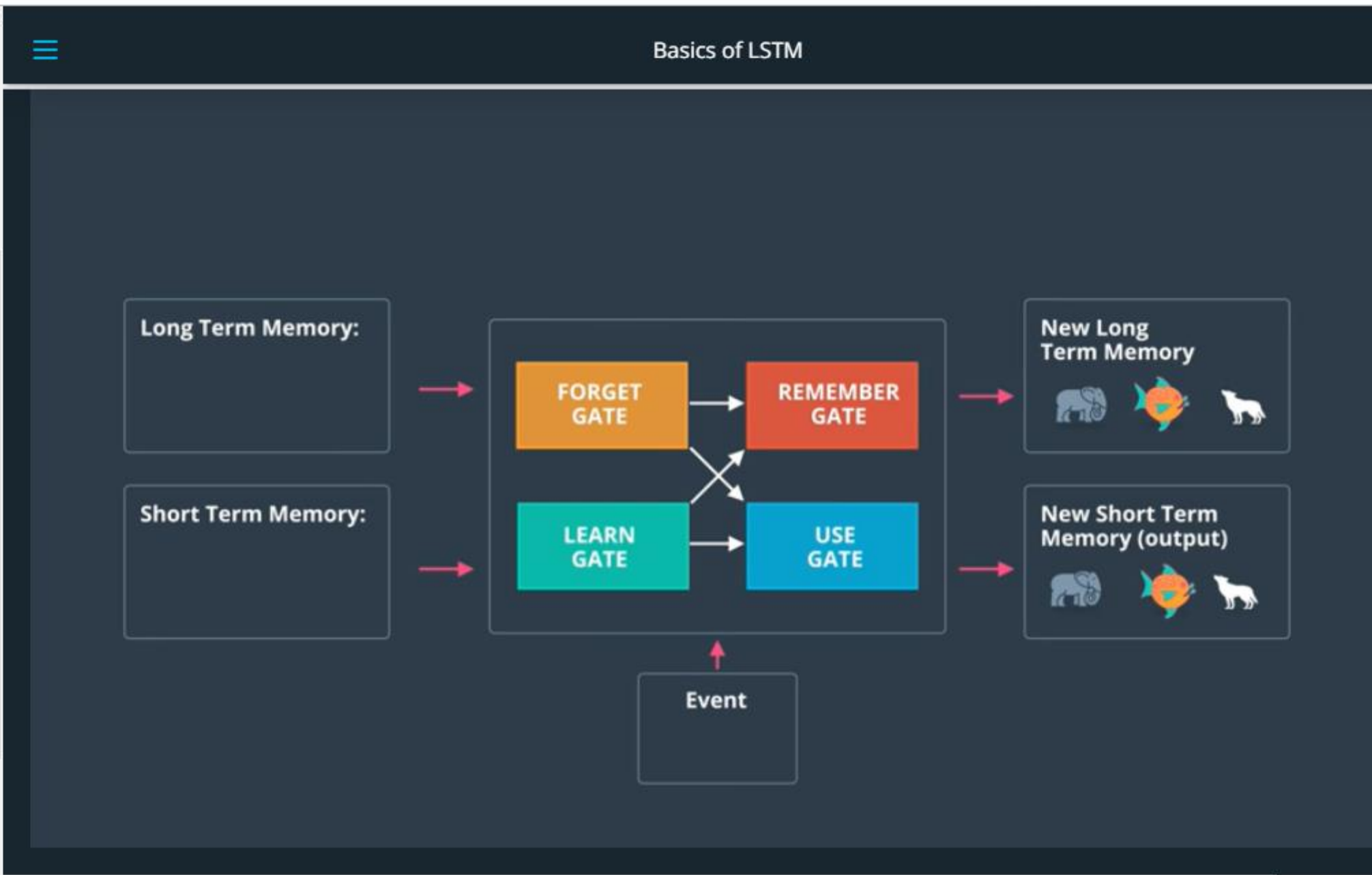


- 2. RNN vs LSTM
- 3. Basics of LSTM**
- 4. Architecture of LSTM
- 5. The Learn Gate
- 6. The Forget Gate
- 7. The Remember Gate
- 8. The Use Gate
- 9. Putting it All Together
- 10. Quiz
- 11. Other architectures
- 12. Outro LSTM





- 2. RNN vs LSTM
- 3. Basics of LSTM
- 4. Architecture of LSTM
- 5. The Learn Gate
- 6. The Forget Gate
- 7. The Remember Gate
- 8. The Use Gate
- 9. Putting it All Together
- 10. Quiz
- 11. Other architectures
- 12. Outro LSTM



2. RNN vs LSTM

3. Basics of LSTM

4. Architecture of LSTM

5. The Learn Gate

6. The Forget Gate

7. The Remember Gate

8. The Use Gate

9. Putting it All Together

10. Quiz

11. Other architectures

12. Outro LSTM



Basics of LSTM

Long Short Term Memory (LSTM)



Learn Gate

Short Term Memory



Event



COMBINE

IGNORE

Forget Gate

Long Term Memory



Remember Gate

Long Term Memory

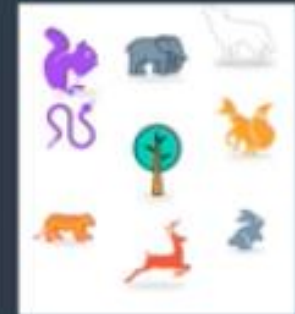


Short Term Memory



REMEMBER
GATE

New Long
Term Memory



Use Gate

Long Term Memory



Short Term Memory



USE
GATE

New Long
Term Memory



LSTM

