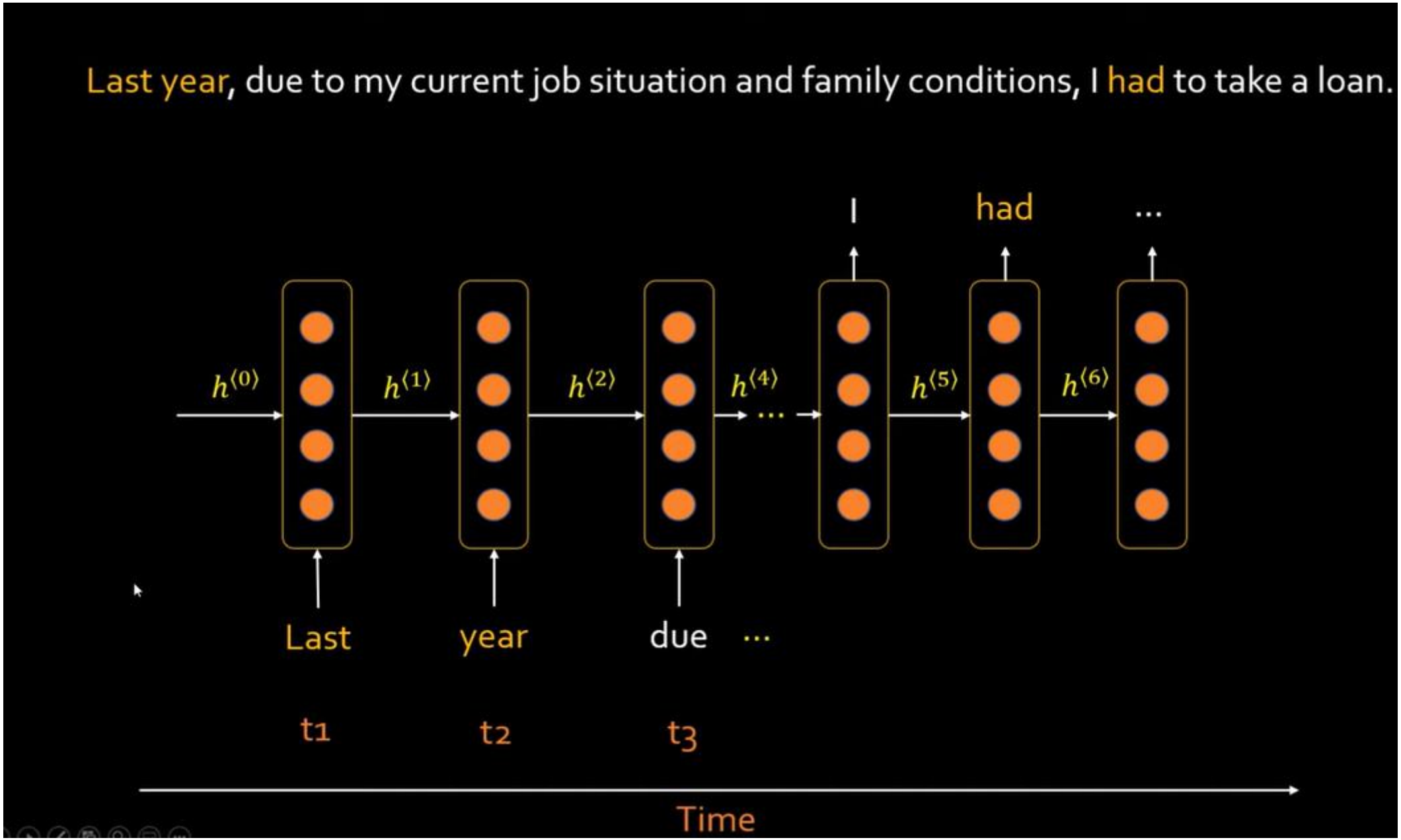
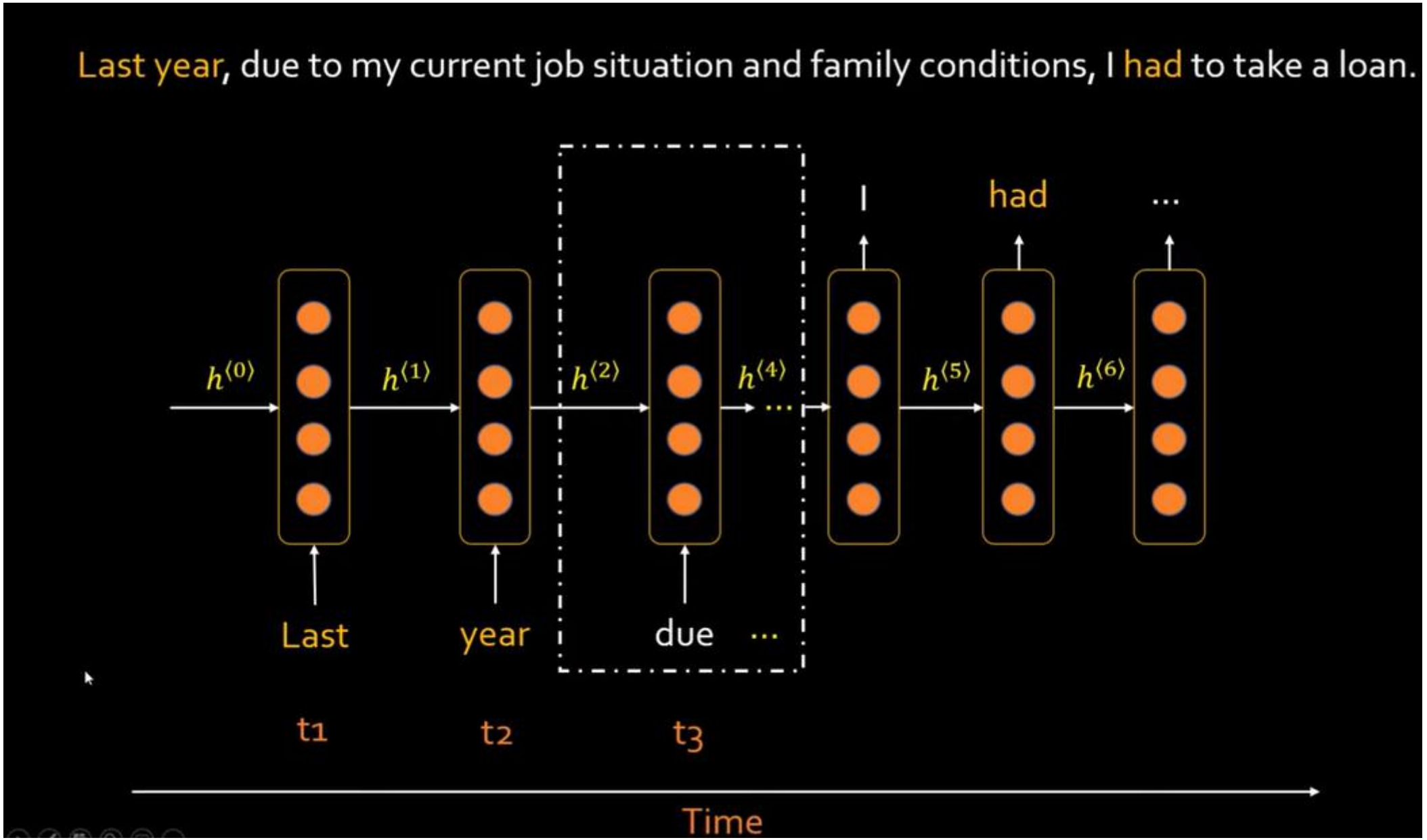
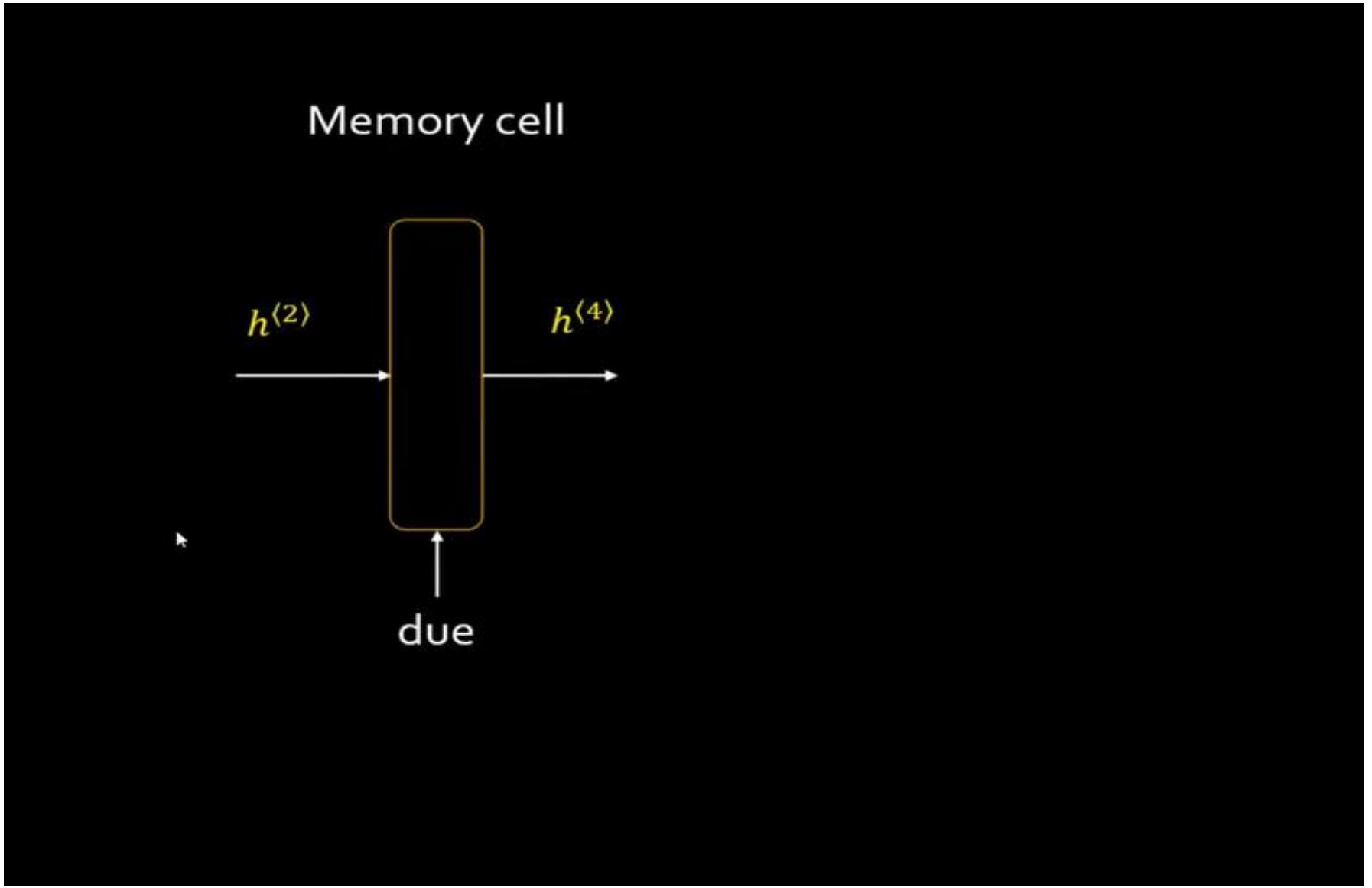
Long Short-Term Memory

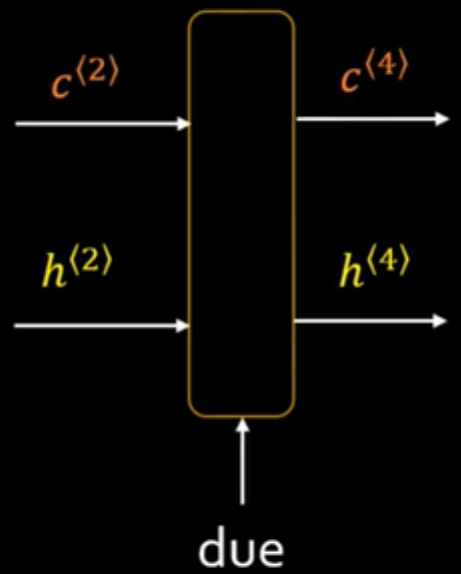
Last year, due to my current job situation and family conditions, I had to take a loan.




Last year, due to my current job situation and family conditions, I had to take a loan.
I
had
...
$h^{\langle 0 \rangle}$
$h^{\langle 1 \rangle}$
$h^{\langle 2 \rangle}$
$h^{\langle 4 \rangle}$
...
$h^{\langle 5 \rangle}$
$h^{\langle 6 \rangle}$
Last
year
due
...
t1
t2
t3
Time


Memory cell
$h^{\langle 2 \rangle}$
$h^{\langle 4 \rangle}$
due

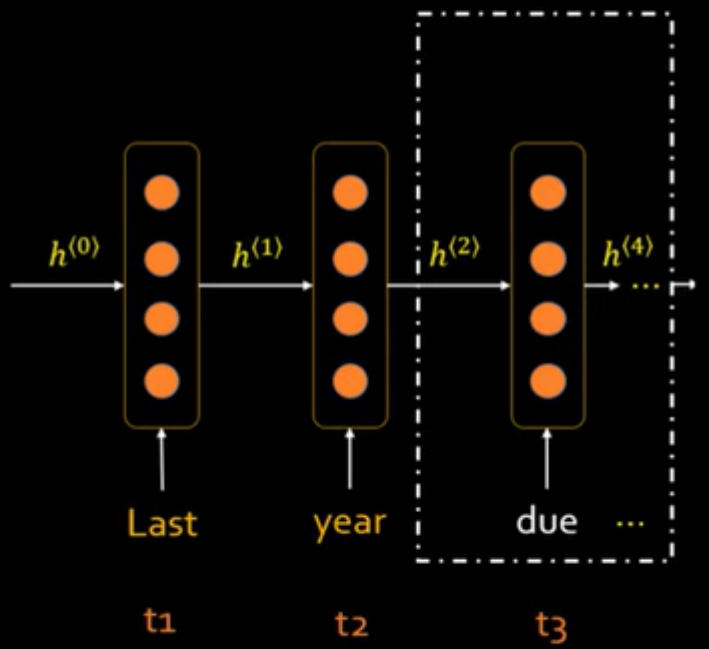
Memory cell

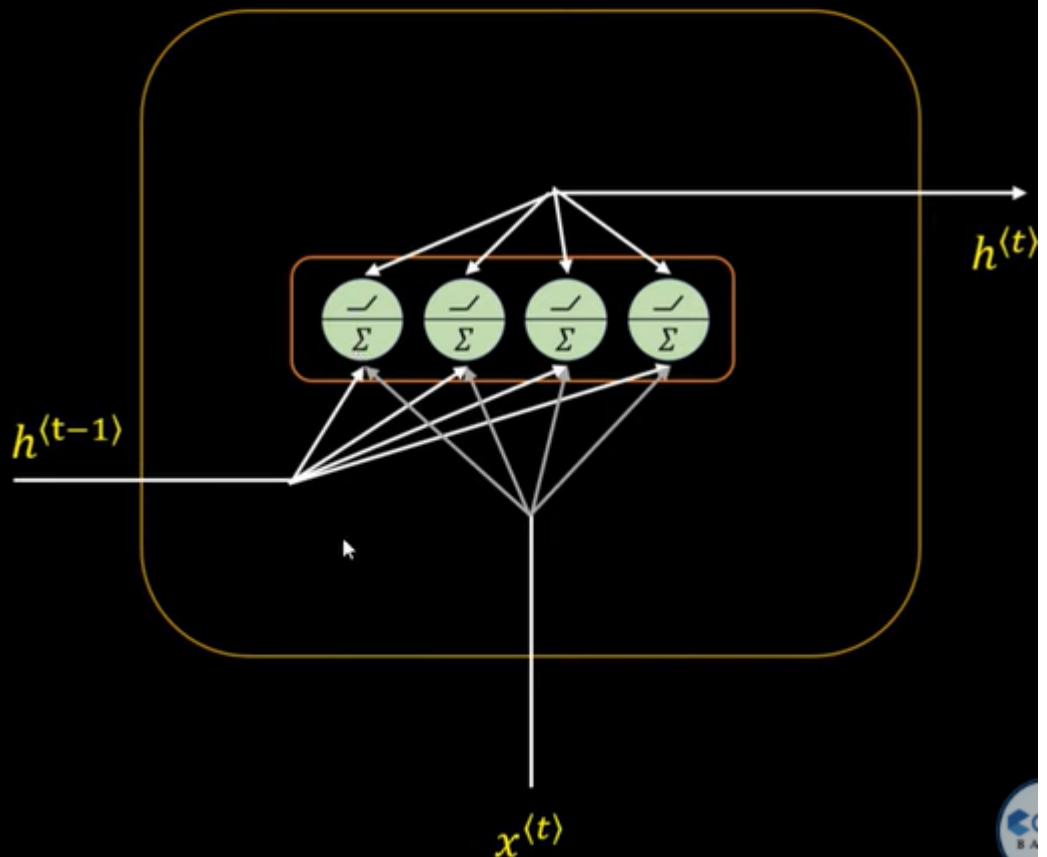


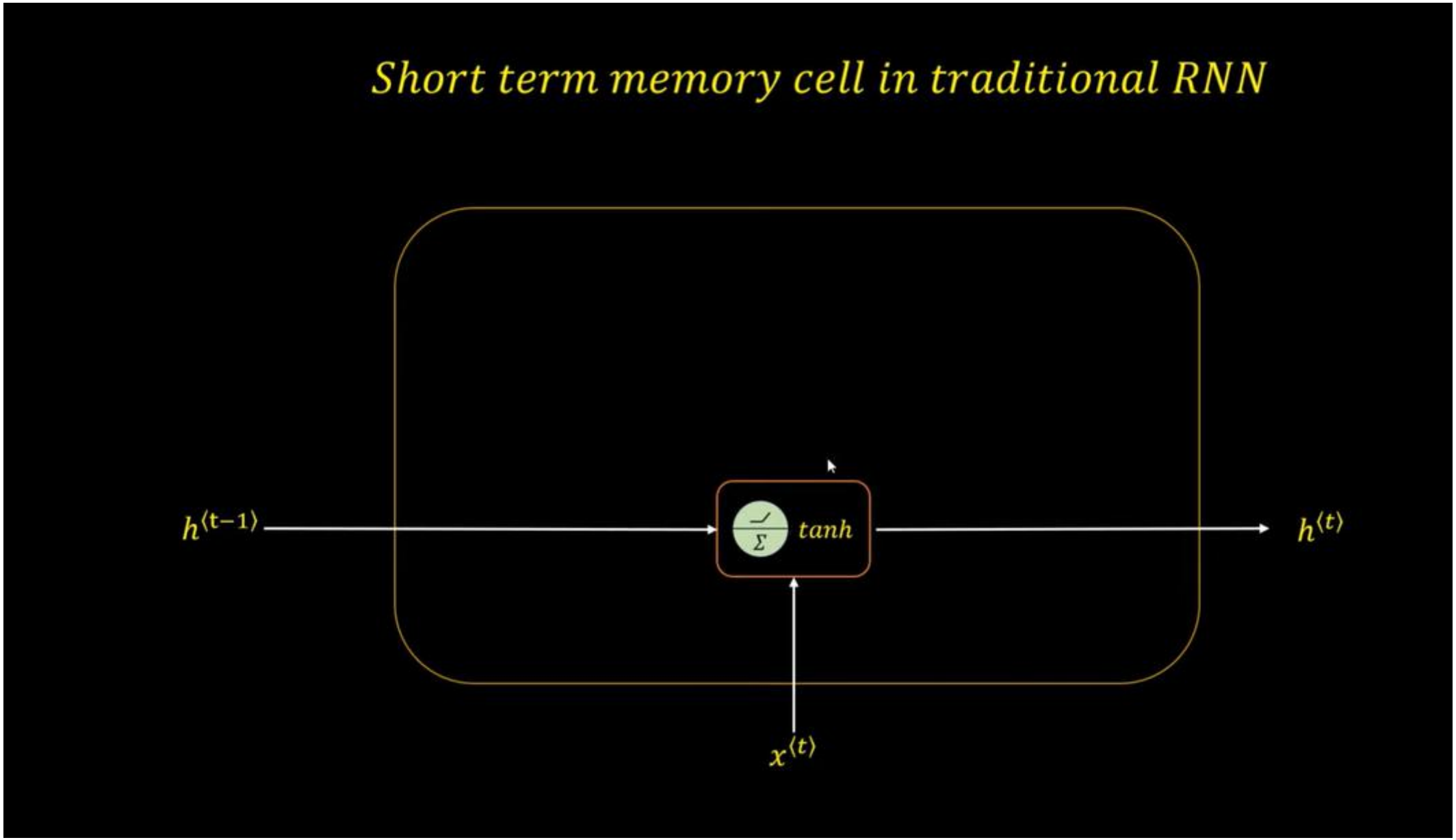
Long term memory

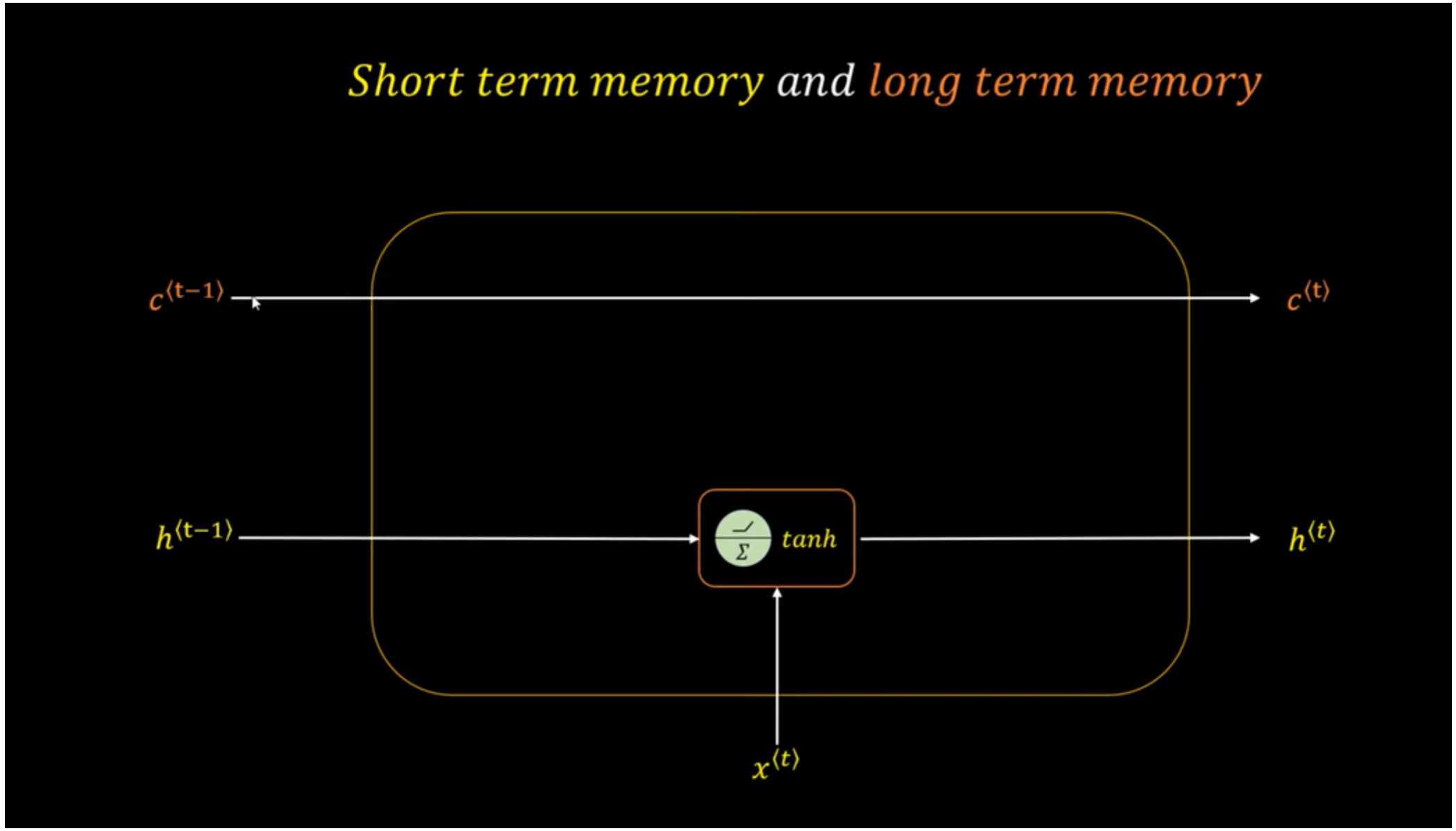
Short term memory

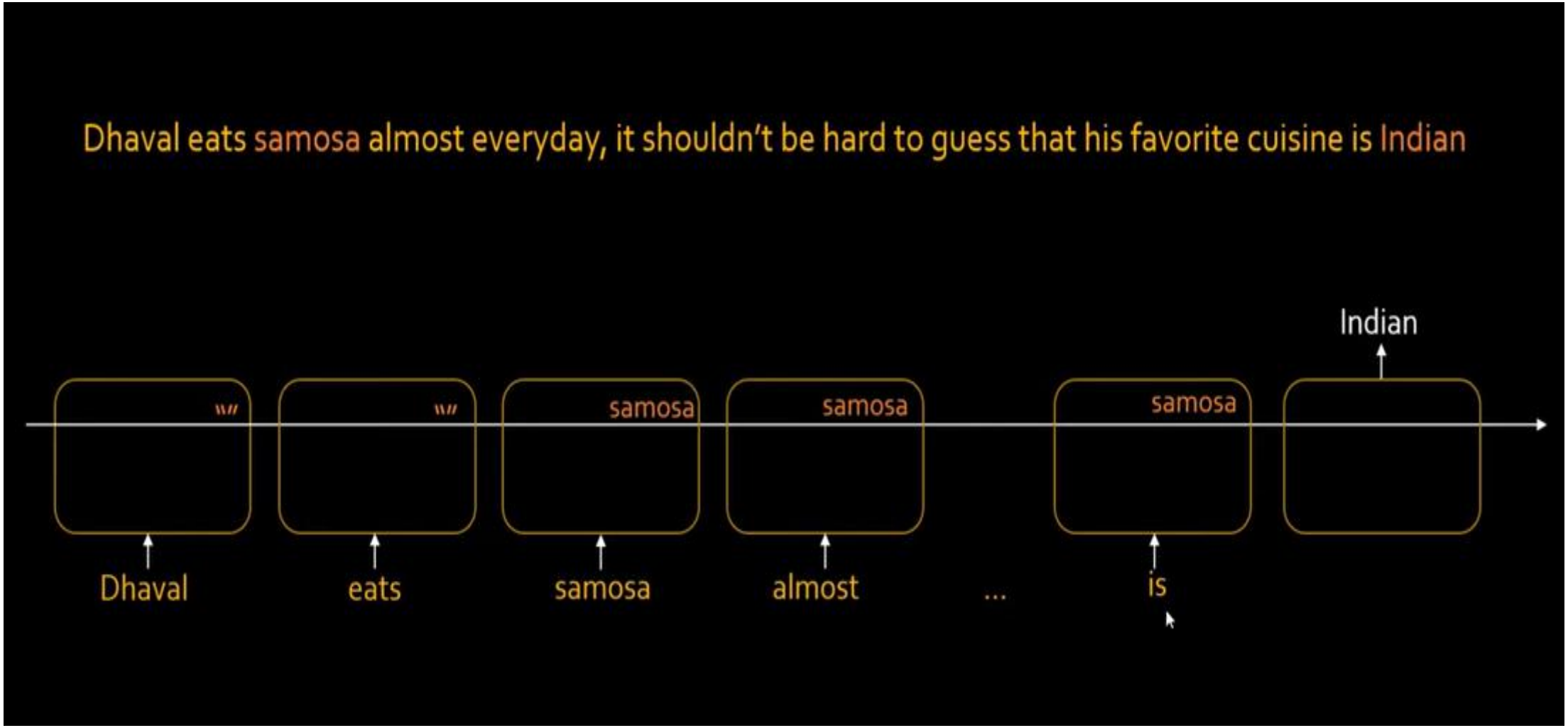
Short term memory cell in traditional RNN





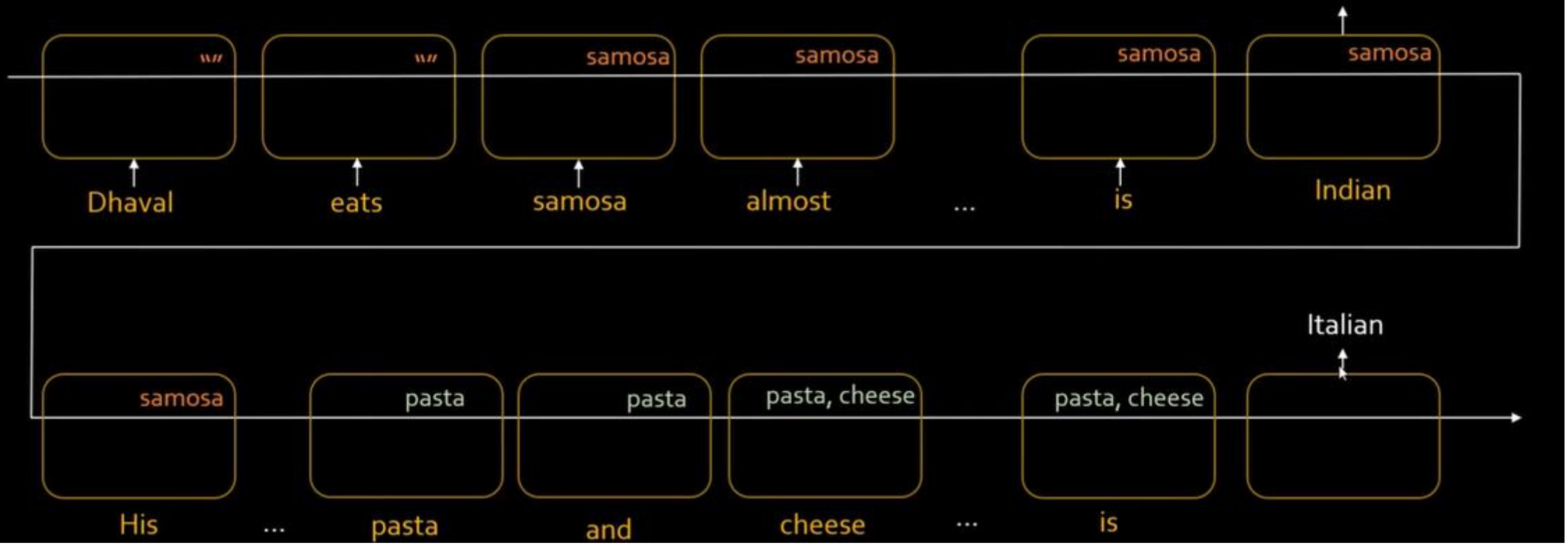

Short term memory cell in traditional RNN
$h^{\langle t-1 \rangle}$
σ
Σ
tanh
$h^{\langle t \rangle}$
$x^{\langle t \rangle}$


Short term memory and long term memory
$c^{\langle t-1 \rangle}$
$c^{\langle t \rangle}$
$h^{\langle t-1 \rangle}$
tanh
$h^{\langle t \rangle}$
$x^{\langle t \rangle}$

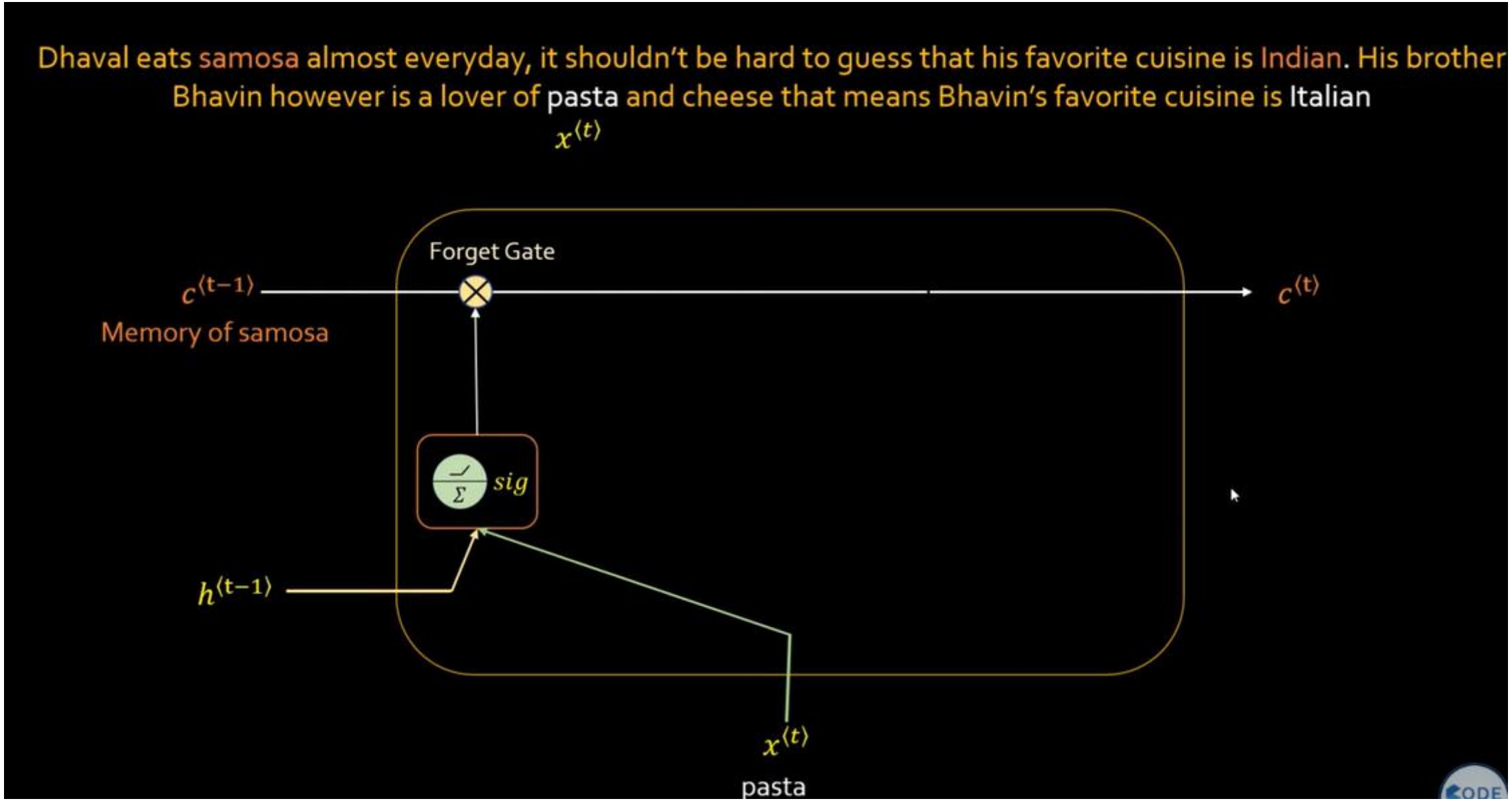

Dhaval eats samosa almost everyday, it shouldn't be hard to guess that his favorite cuisine is Indian
Indian
samosa
samosa
samosa
Dhaval
eats
samosa
almost
...
is

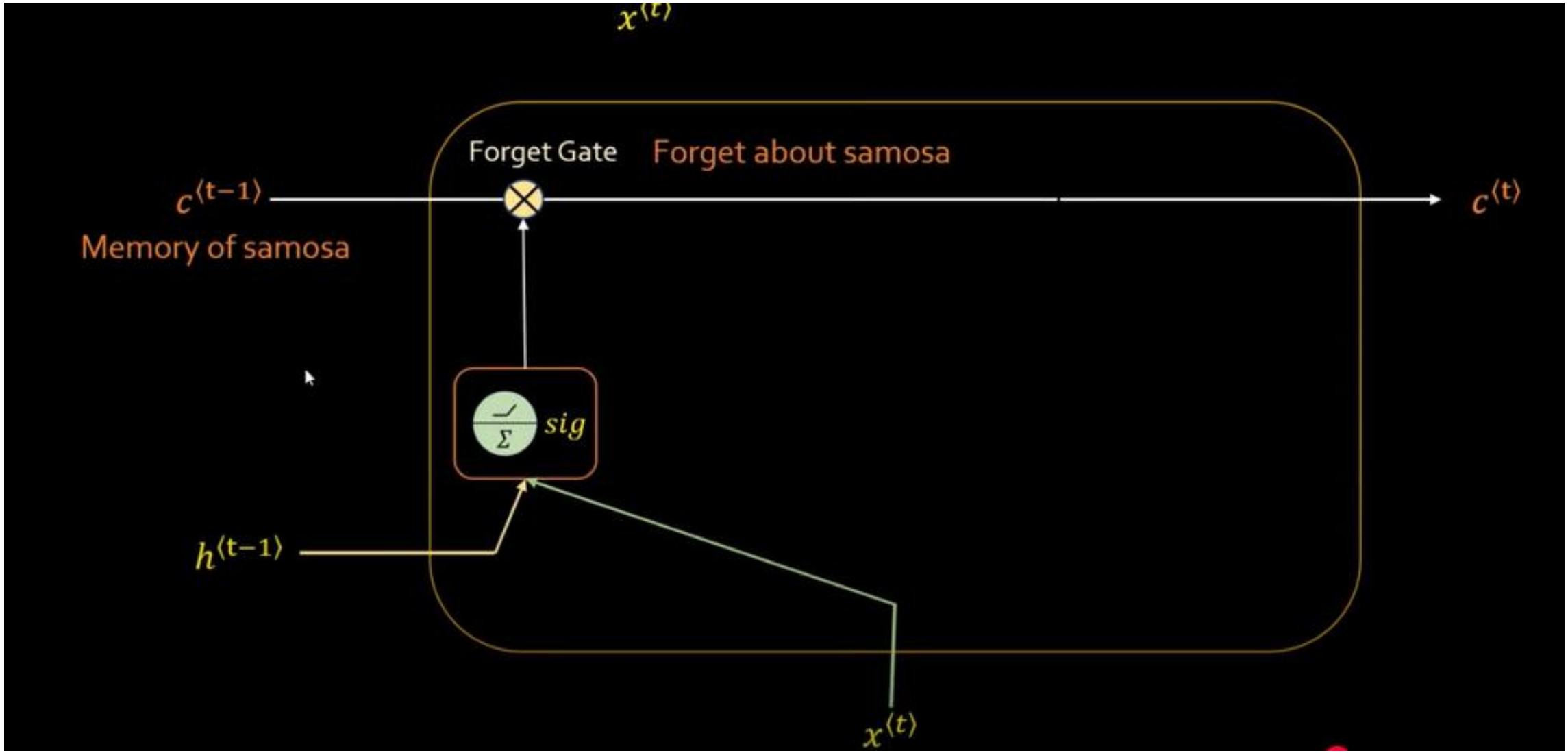
Dhaval eats samosa almost everyday, it shouldn't be hard to guess that his favorite cuisine is Indian. His brother Bhavin however is a lover of pastas and cheese that means Bhavin's favorite cuisine is Italian

Dhaval eats samosa almost everyday, it shouldn't be hard to guess that his favorite cuisine is Indian. His brother Bhavin however is a lover of pasta and cheese that means Bhavin's favorite cuisine is Italian

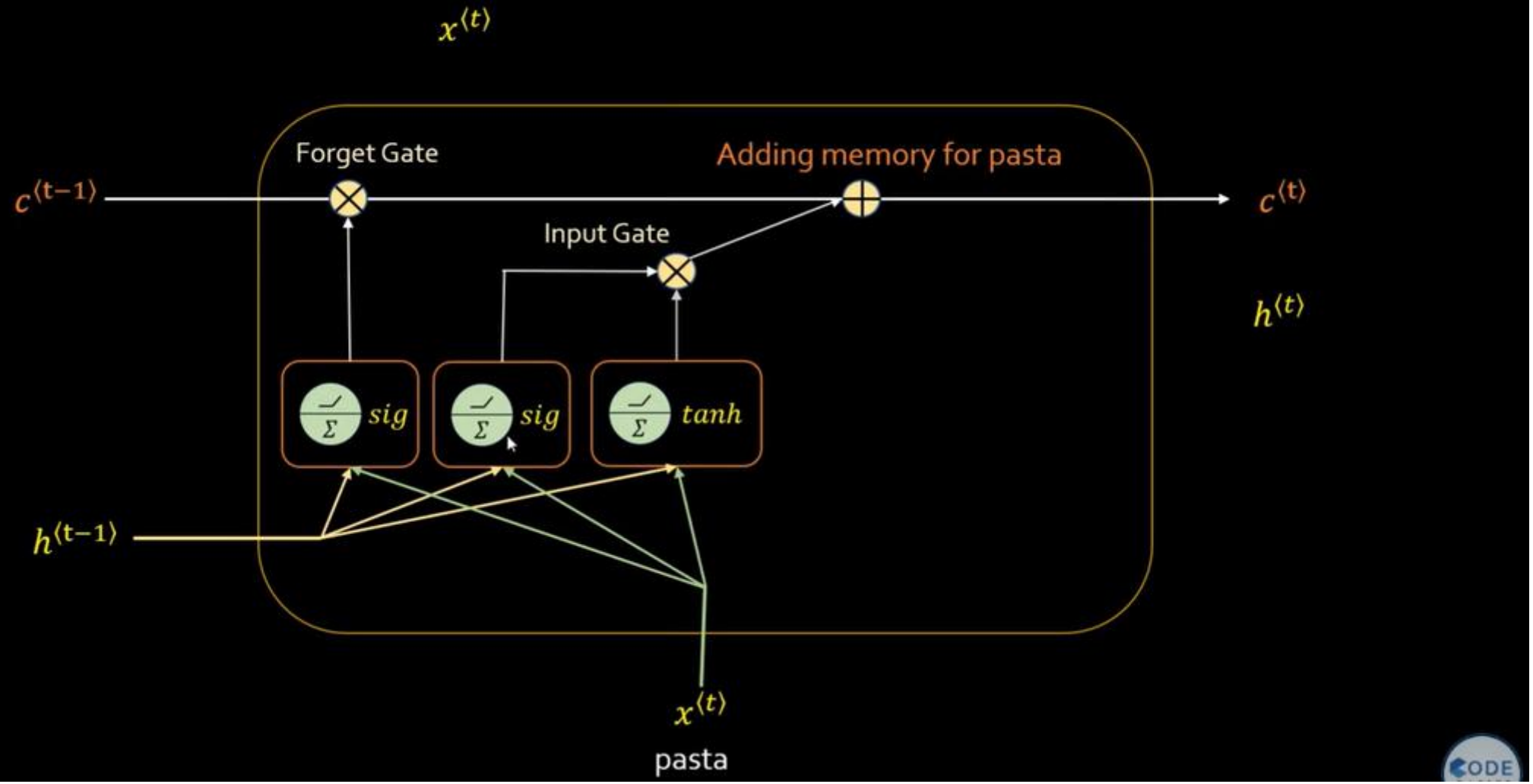


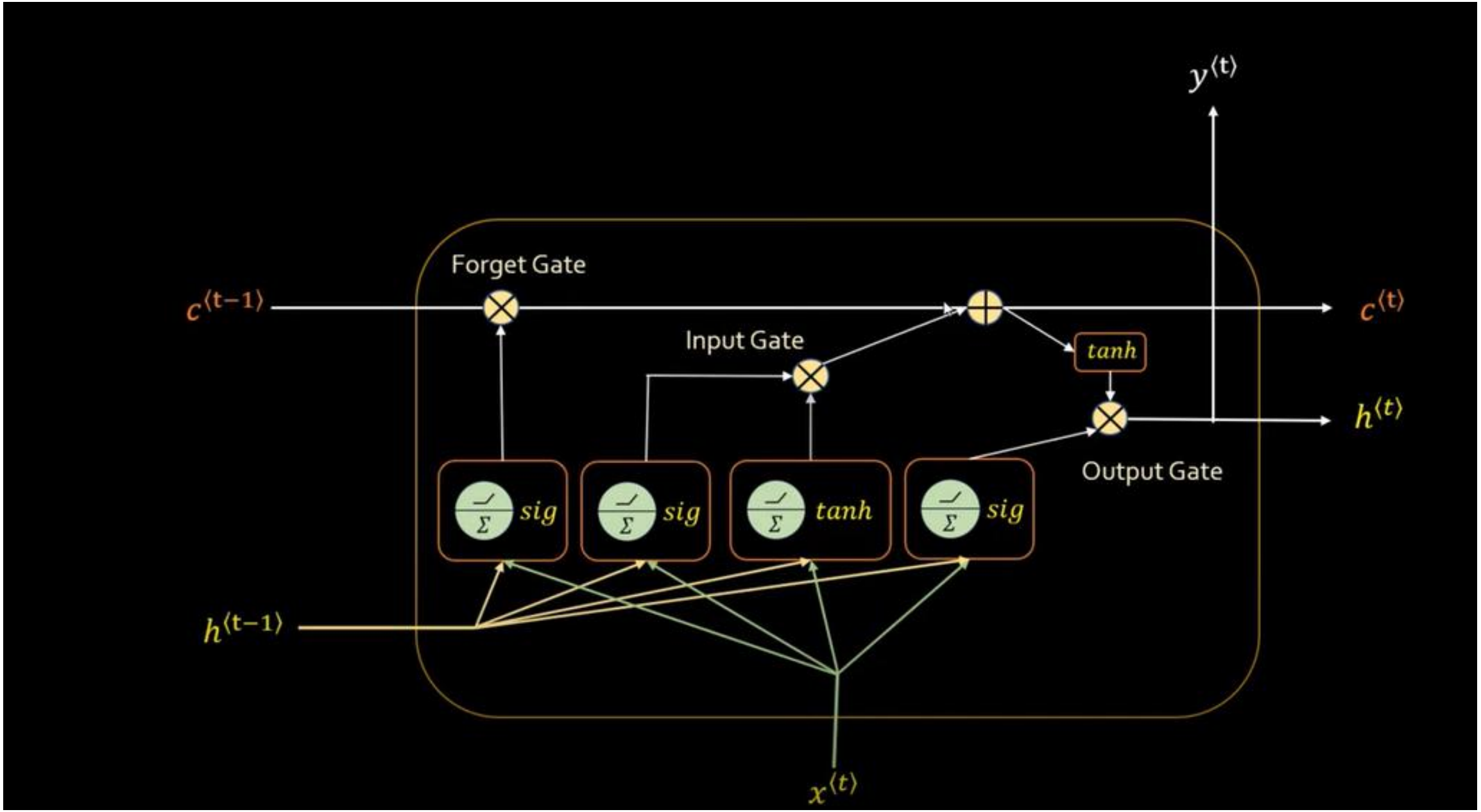
Dhaval eats samosa almost everyday, it shouldn't be hard to guess that his favorite cuisine is Indian. His brother Bhavin however is a lover of pasta and cheese that means Bhavin's favorite cuisine is Italian




$x^{\langle t \rangle}$
Forget Gate
Forget about samosa
$c^{\langle t-1 \rangle}$
Memory of samosa
$c^{\langle t \rangle}$
sig
$h^{\langle t-1 \rangle}$
$x^{\langle t \rangle}$

Dhaval eats samosa almost everyday, it shouldn't be hard to guess that his favorite cuisine is Indian. His brother Bhavin however is a lover of pasta and cheese that means Bhavin's favorite cuisine is Italian




$y^{\langle t \rangle}$
Forget Gate
$c^{\langle t-1 \rangle}$
$c^{\langle t \rangle}$
Input Gate
$tanh$
$h^{\langle t \rangle}$
Output Gate
sig
sig
$tanh$
sig
$h^{\langle t-1 \rangle}$
$x^{\langle t \rangle}$