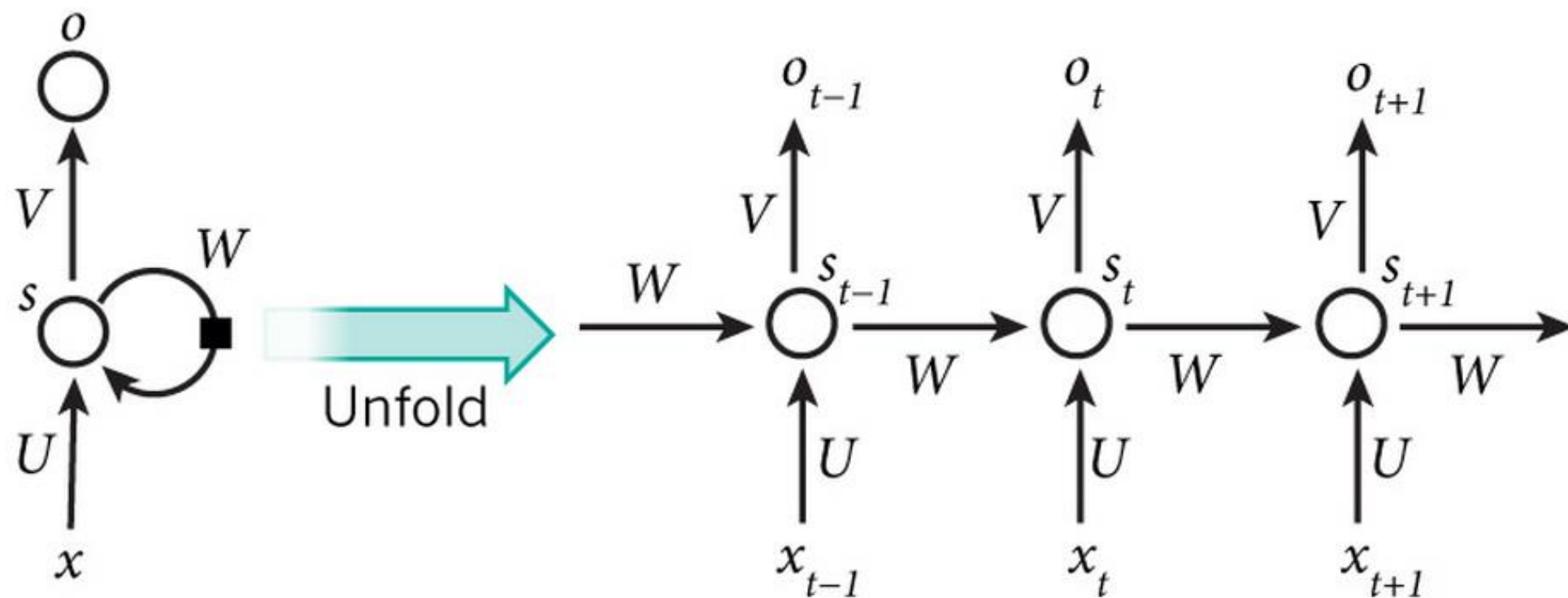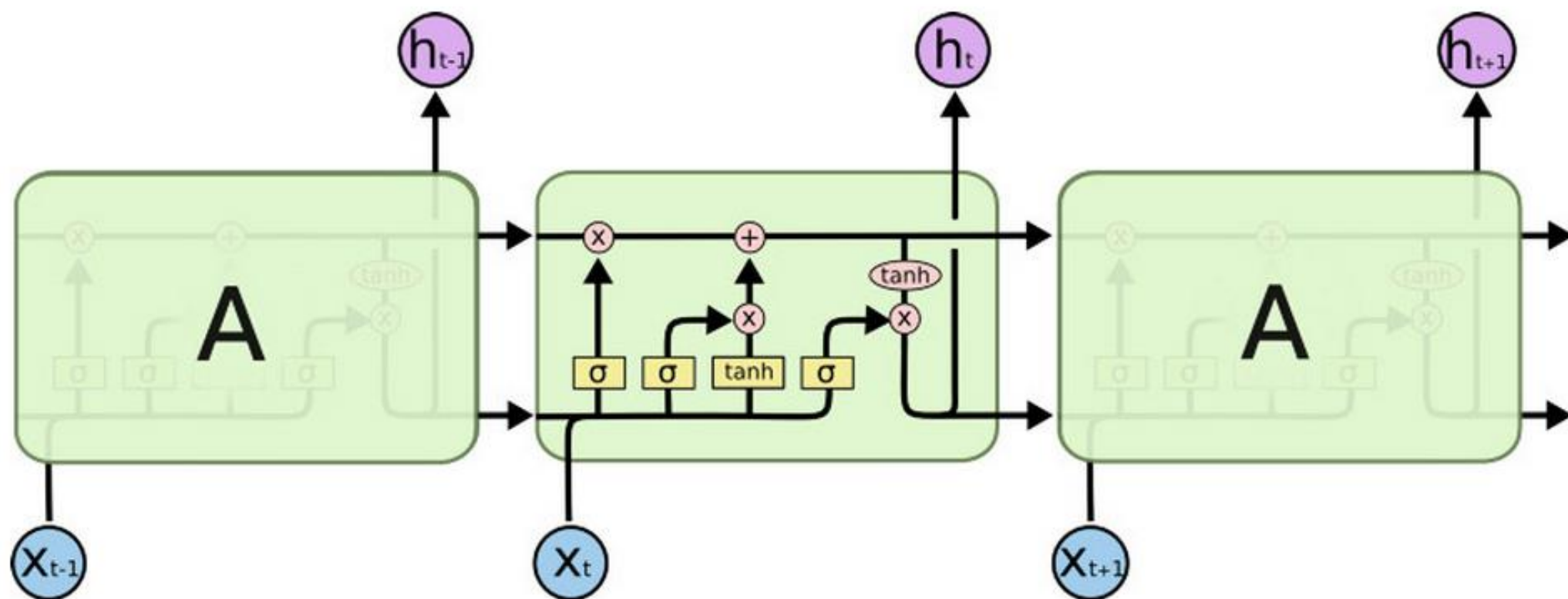# Seq2Seq

✓ RNN网络架构

Seq2Seq

✓ LSTM网络架构

Seq2Seq

- ✓ 机器翻译的历史

  - ✎ 最早期的逐字翻译

Quiero ir a la playa más bonita.

I want　　to go　　to　　the　　beach　　more　　pretty.
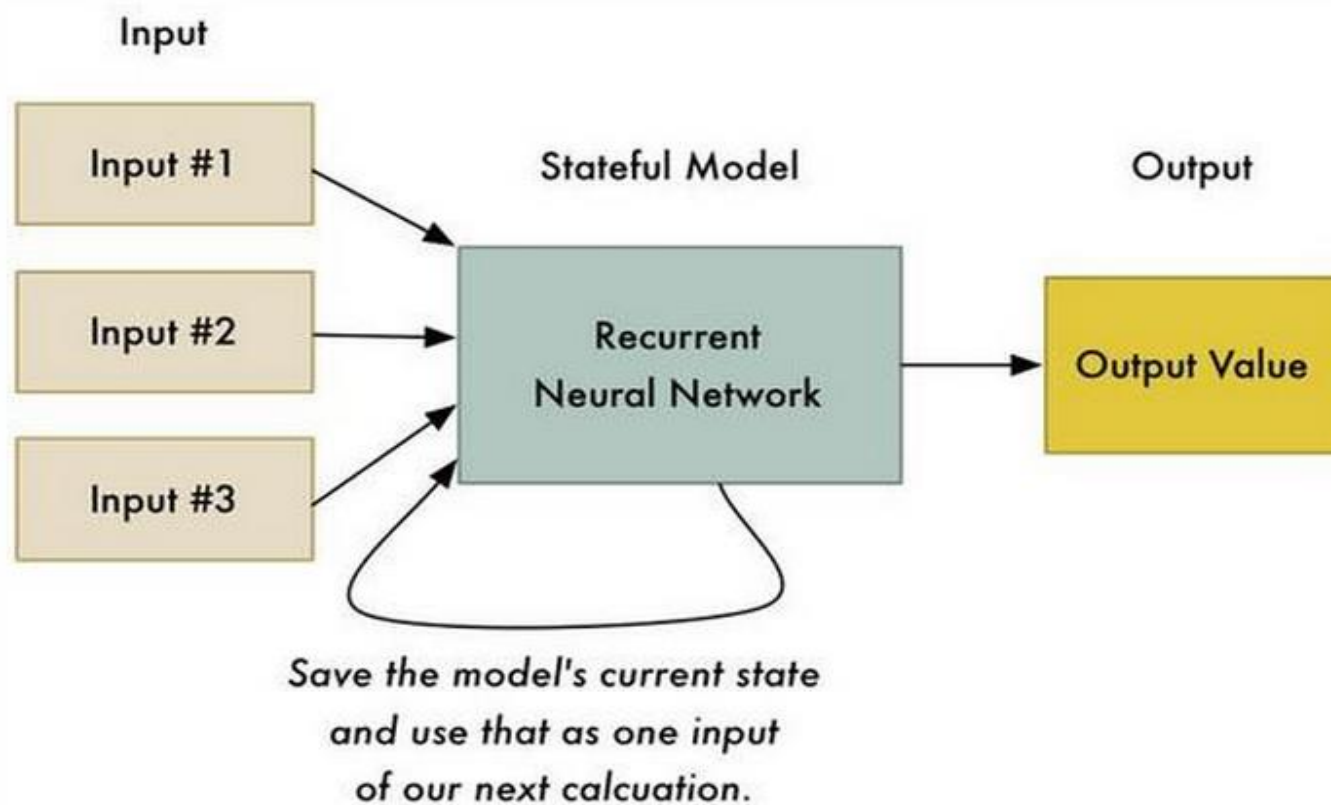
Seq2Seq

✓ 机器翻译的历史
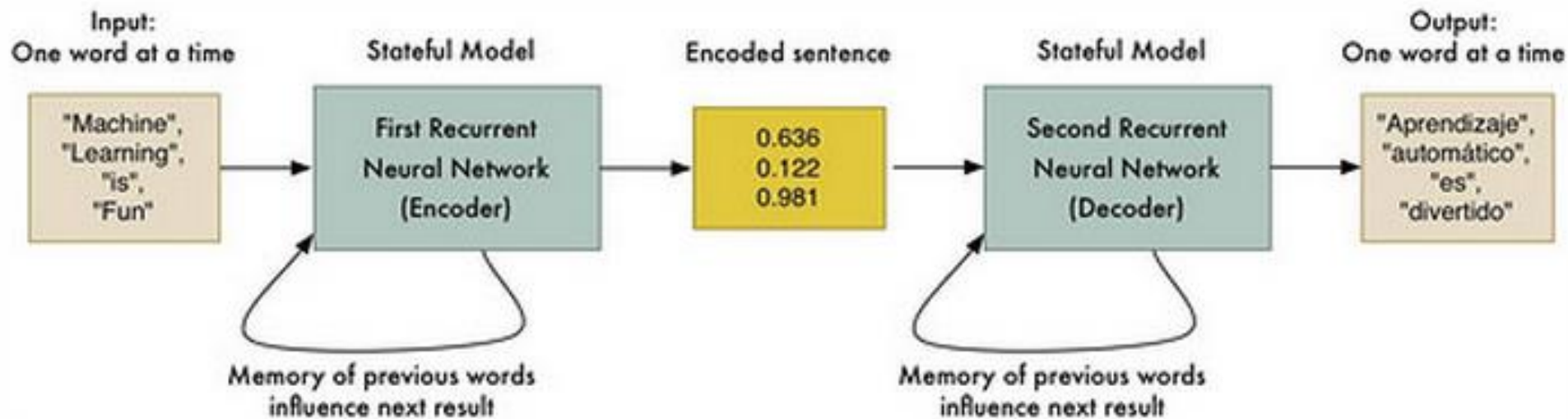
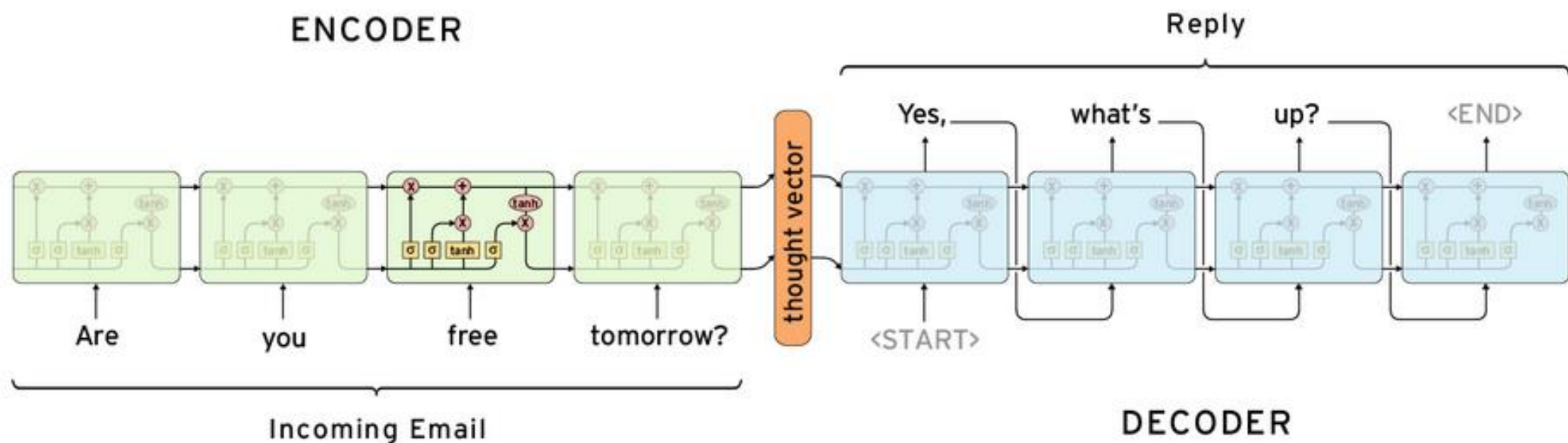✎ 统计学的机器翻译

Quiero ir a la playa más bonita.

- I want	- to go	- to	- the beach	- more pretty
- I love	- to work	- at	- the seaside	- most pretty
- I like	- to run	- per	- the open space	- more lovely
- I try	- to appear			- most lovely
- I mean	- to be on			- more tidy
	- to be			- most tidy
	- to leave			
	- to pass away			
	- to forget			

Seq2Seq

- ✓ 机器翻译的历史

- ✎ 循环网络和编码

Seq2Seq

✓ 机器翻译的历史

✎ 解码与翻译

Seq2Seq
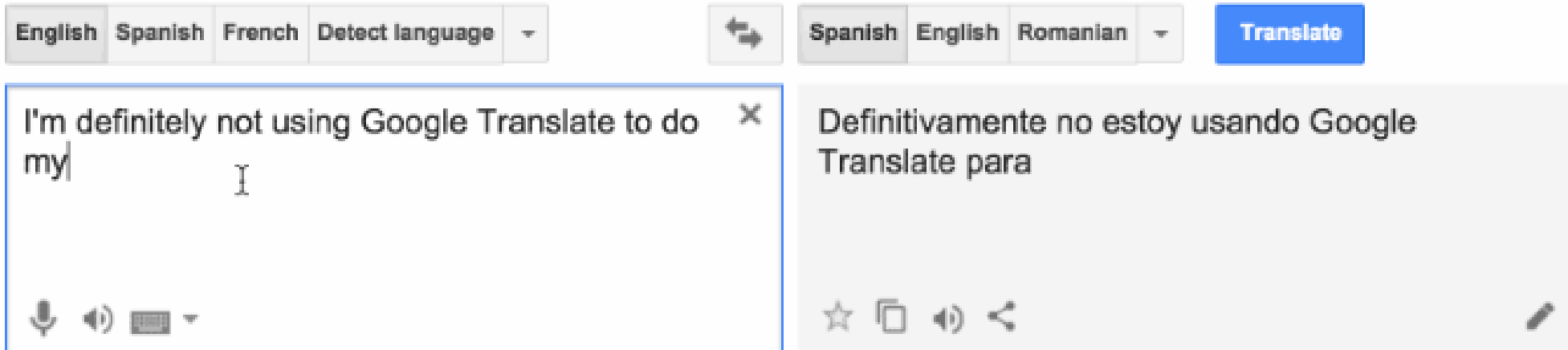
✓ Seq2Seq网络架构（sequence-to-sequence）

Seq2Seq

✓ Seq2Seq应用

✎ 机器翻译

Seq2Seq

✓ Seq2Seq应用

✎ 文本摘要

| Good quality summary output |
|---|
| **S**: a man charged with the murder last year of a british back-packer confessed to the slaying on the night he was charged with her killing , according to police evidence presented at a court hearing tuesday . ian douglas previte , ## , is charged with murdering caroline stuttle , ## , of yorkshire , england **T**: man charged with british backpacker 's death confessed to crime police officer claims **O**: man charged with murdering british backpacker confessed to murder |
| **S**: following are the leading scorers in the english premier league after saturday 's matches : ## - alan shearer -lrb- newcastle united -rrb- , james beattie . **T**: leading scorers in english premier league **O**: english premier league leading scorers |
| **S**: volume of transactions at the nigerian stock exchange has continued its decline since last week , a nse official said thursday . the latest statistics showed that a total of ##.### million shares valued at ###.### million naira -lrb- about #.### million us dollars -rrb- were traded on wednesday in #,### deals . **T**: transactions dip at nigerian stock exchange **O**: transactions at nigerian stock exchange down |

Seq2Seq

✓ Seq2Seq应用

✎ 情感对话生成

Post	Model		Response(Original)	Response(Translated)
比情人节更庸俗的事就是，对情人节的接待规格待遇提出要求。 What is more vulgar than Valentine's day is to make specific demands on the reception of the Valentine's day.	Seq2Seq		这才是真正的情人节。	This is a real Valentine's day.
	ECM	Like	情人节快乐！	Happy Valentine's Day!
		Happiness	哈哈，这也太浪漫了吧！	Aha, this is too romantic!
		Sadness	我也想要这样的情人节。	I also want this kind of Valentine's day, sigh.
		Disgust	这就是所谓的情人节！	This is the so-called Valentine's day!
		Anger	这是赤裸裸的炫耀啊！	This is shameless show-off!
知道真相的我眼泪笑下来。 Knowing the truth, I laughed myself to tears.	Seq2Seq		知道真相的我眼泪掉下来。	After knowing the truth, I burst into tears.
	ECM	Like	太可爱了。太可爱了！	Too lovely, it's too lovely.
		Happiness	笑得我眼泪都出来了。	I can't help laugh myself to tears.
		Sadness	知道真相的我眼泪掉下来。	After knowing the truth, I burst into tears.
		Disgust	这是真的还是假的？	Is this true?
		Anger	什么意思？没看懂。	What do you mean? I don't understand.

Seq2Seq

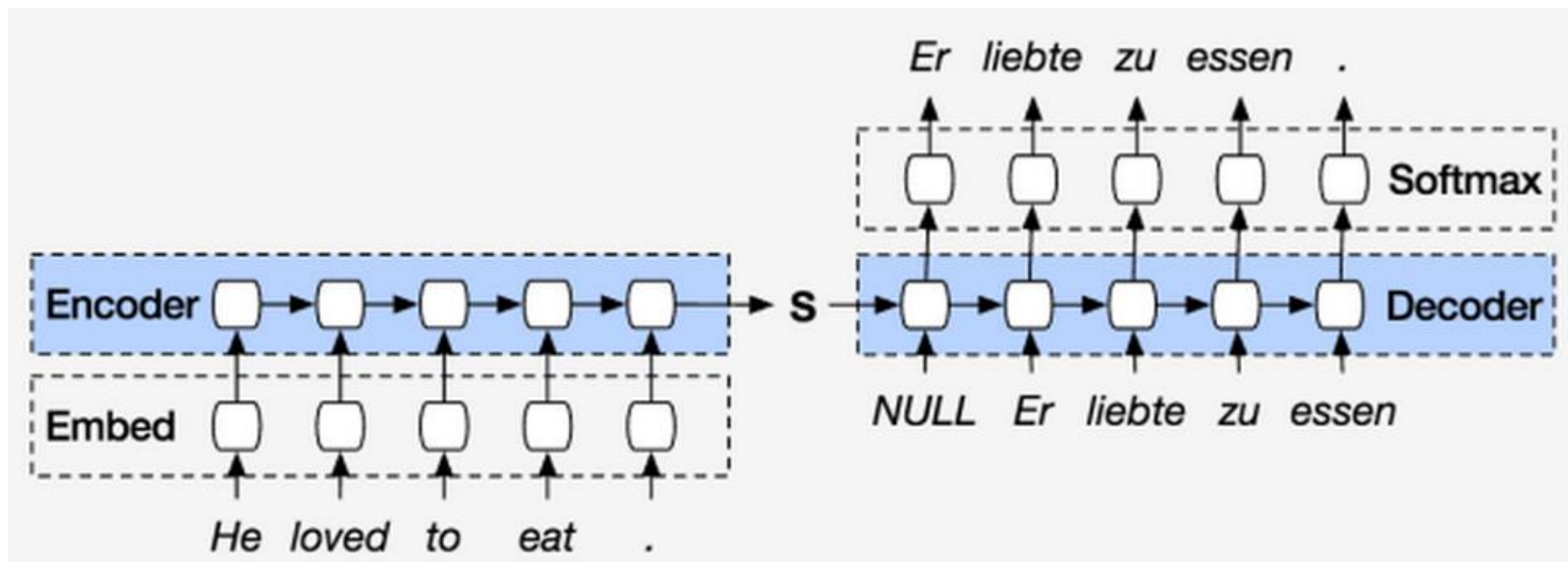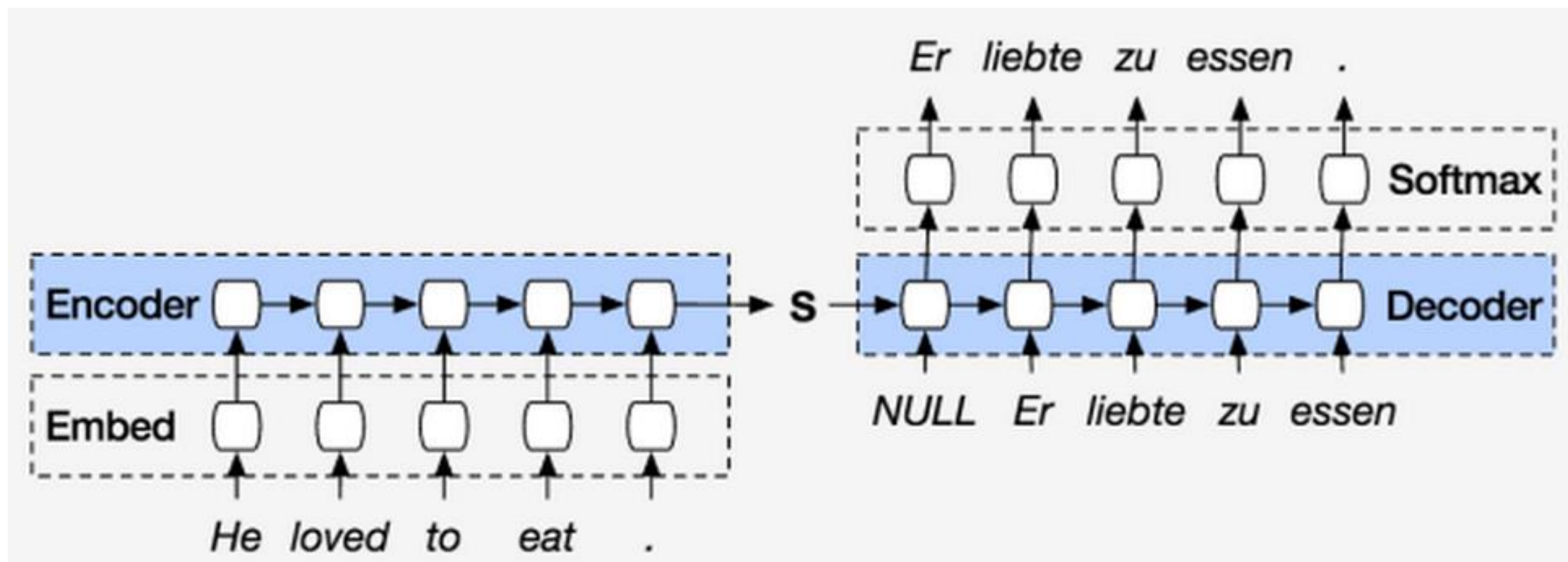✔ Seq2Seq应用

✎ 代码补全
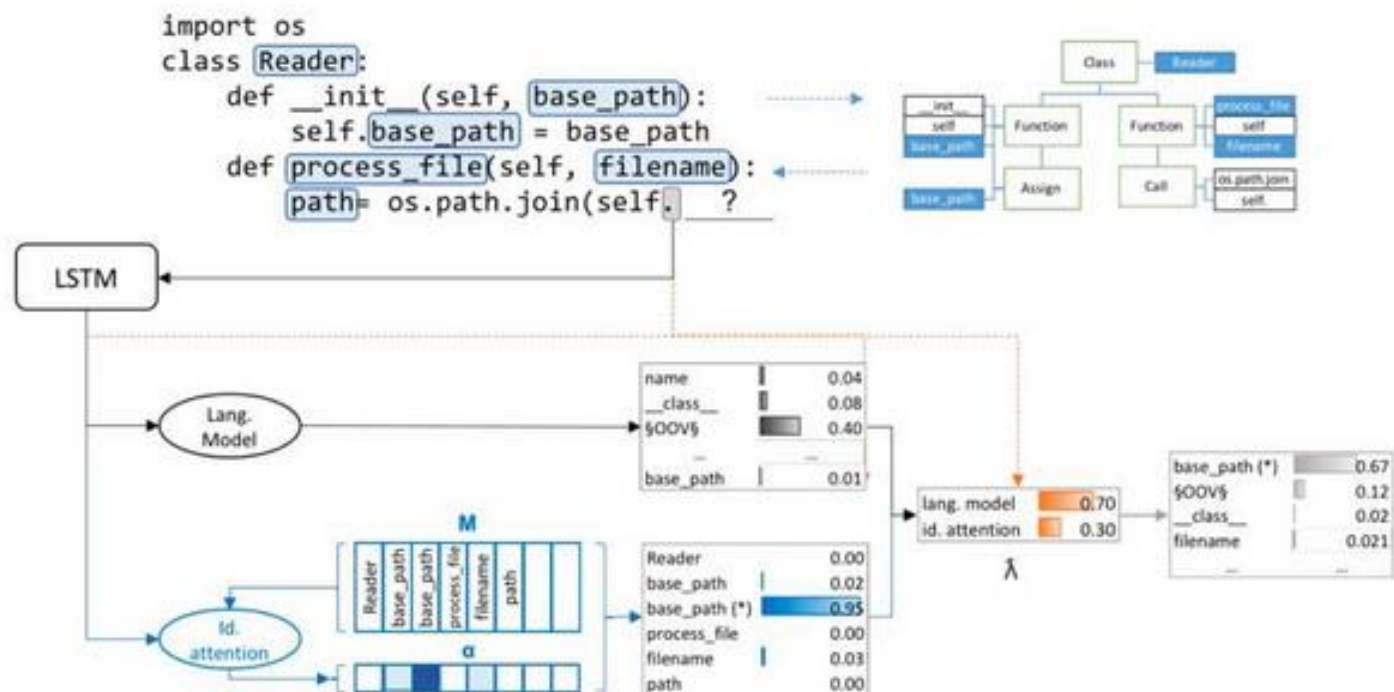
Seq2Seq

✓ Seq2Seq存在的问题

✎ 压缩损失了信息

Seq2Seq
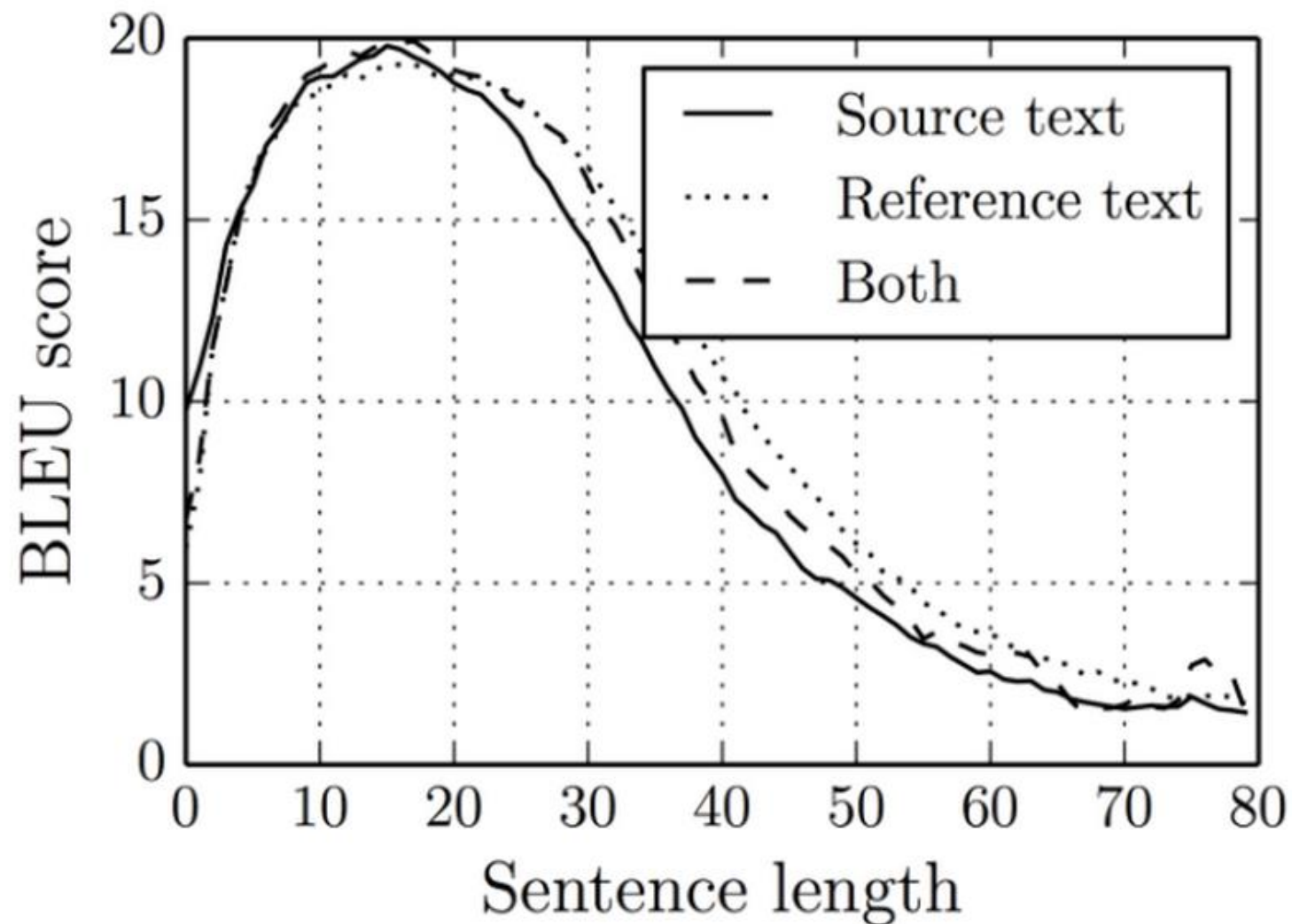
✓ Seq2Seq存在的问题

🖉 压缩损失了信息

Seq2Seq

- ✓ Seq2Seq存在的问题
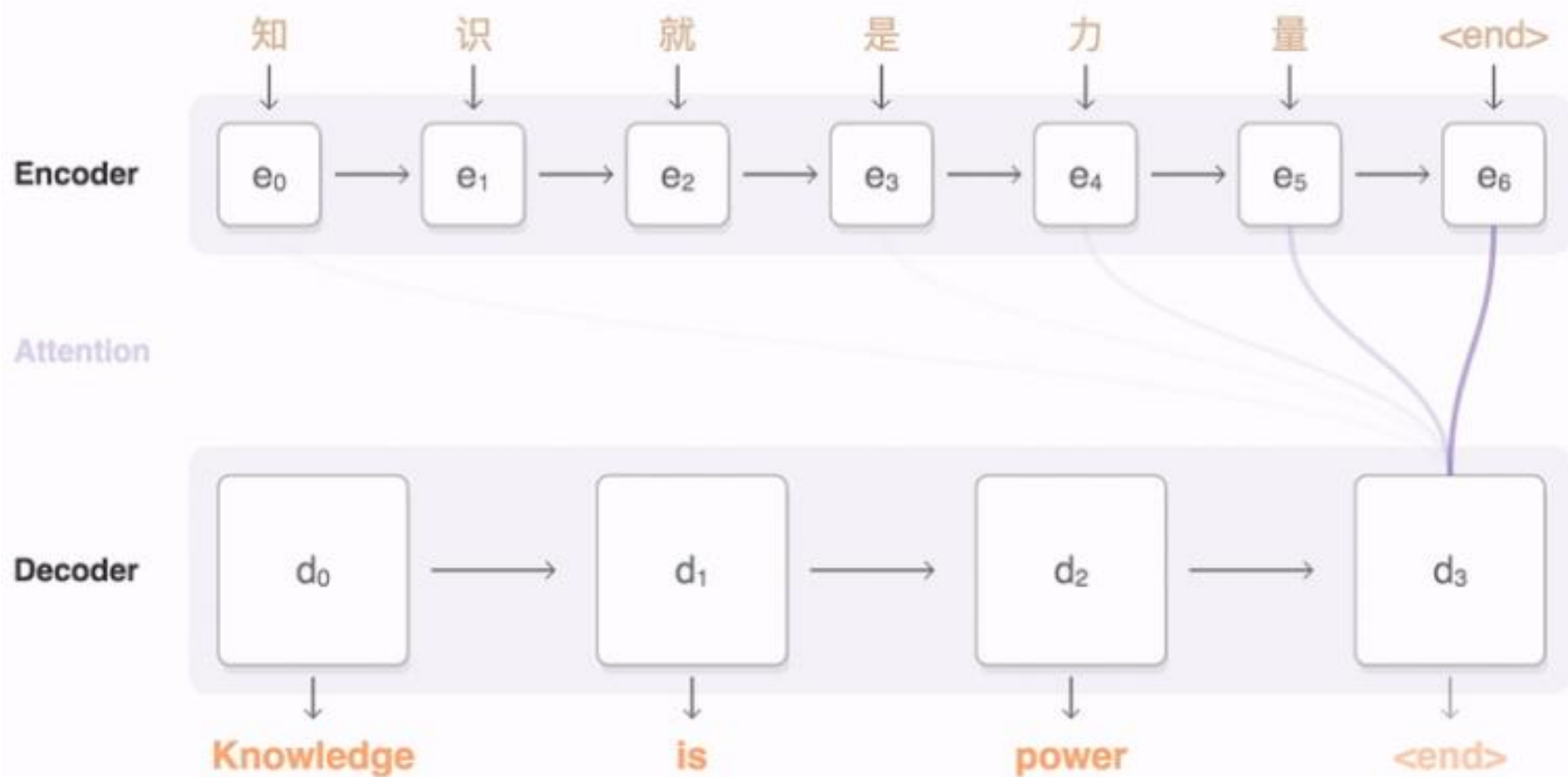
  - ✐ 长度限制

Seq2Seq

✓ Attention机制

✎ "高分辨率"聚焦在图片的某个特定区域并以"低分辨率"感知图像的周边区域的模式

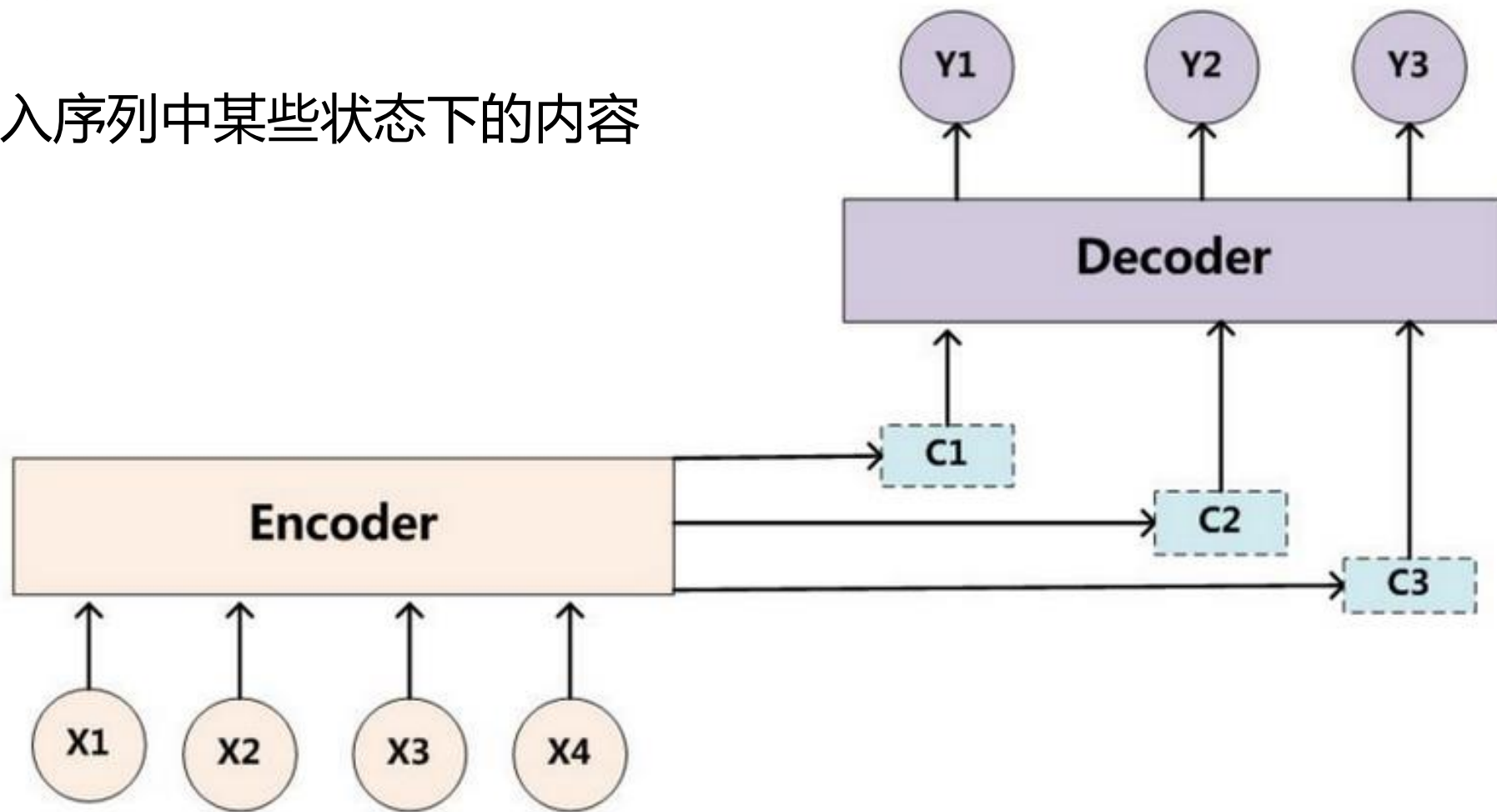✎ 通过大量实验证明，将attention机制应用在机器翻译，摘要生成，阅读理解等问题上，取得的成效显著

Seq2Seq

✓ Attention机制

✎ 关注输入序列中某些状态下的内容

Seq2Seq

✓ Attention机制

✎ 关注输入序列中某些状态下的内容
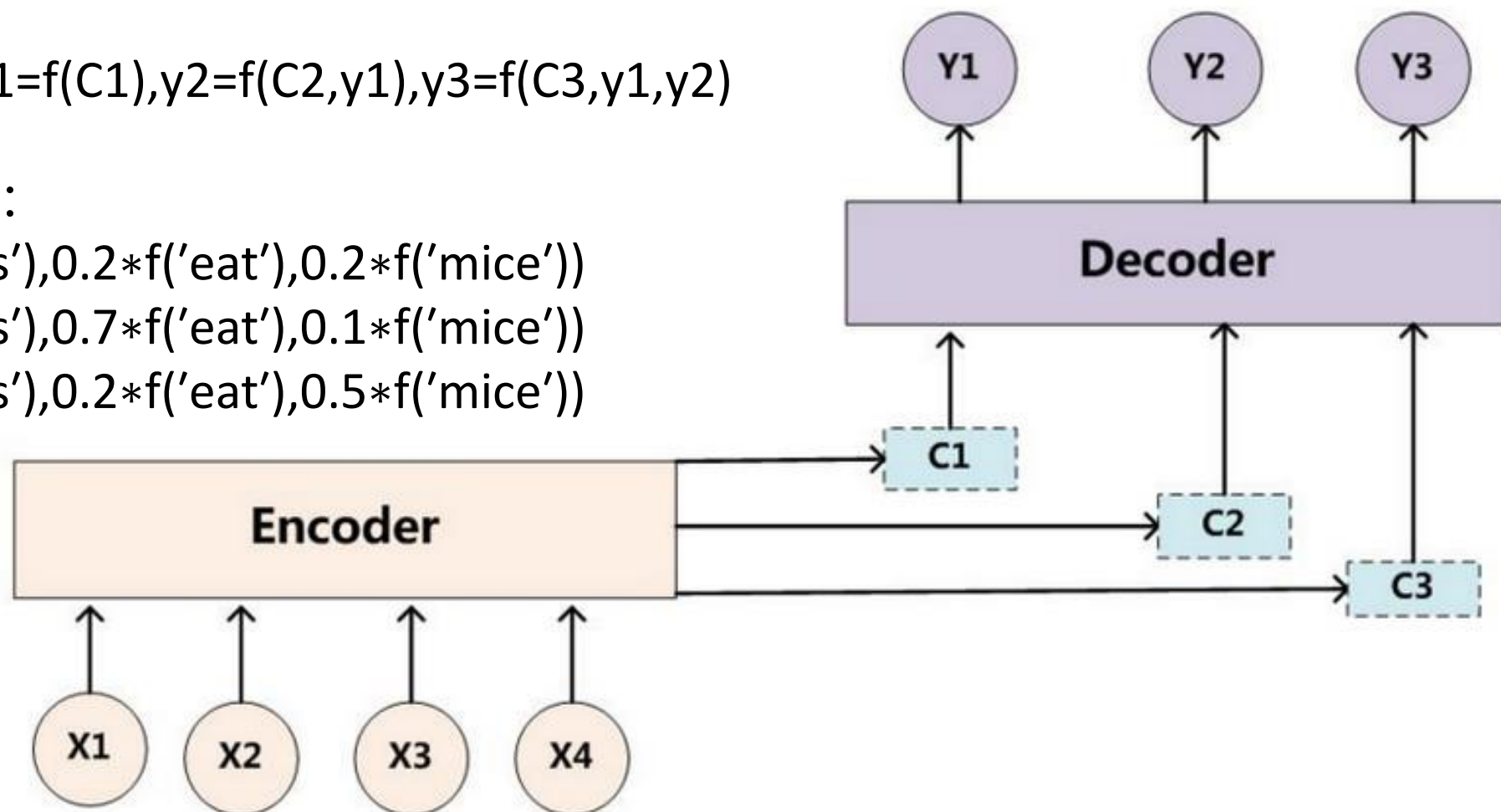
Seq2Seq

✓ 机器翻译：Cats eat mice $y1=f(C1),y2=f(C2,y1),y3=f(C3,y1,y2)$

✎ 无Attention: $y1=f(C1),y2=f(C2,y1),y3=f(C3,y1,y2)$

加入Attention:
$C1=g(0.6*f('Cats'),0.2*f('eat'),0.2*f('mice'))$
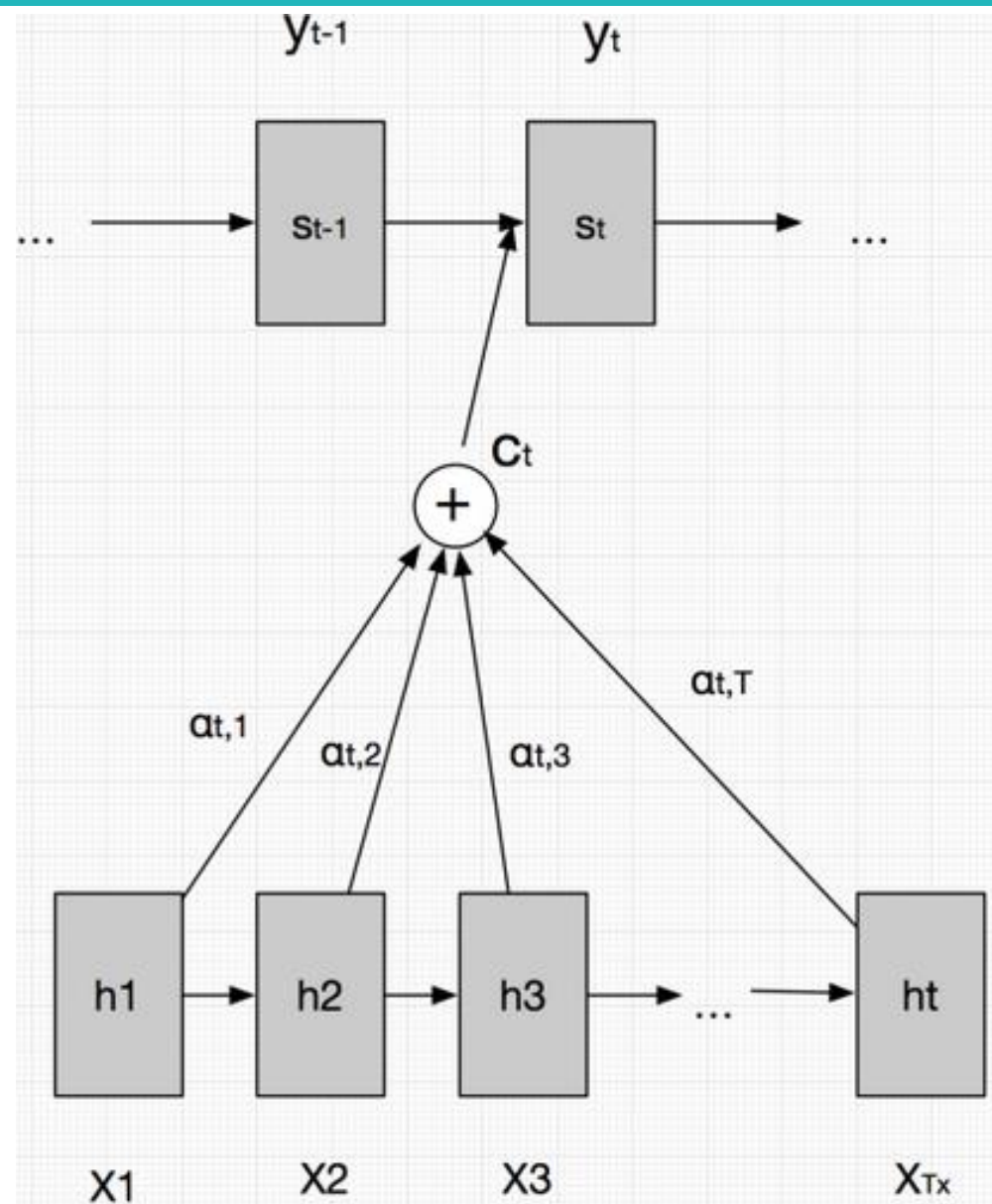$C2=g(0.2*f('Cats'),0.7*f('eat'),0.1*f('mice'))$
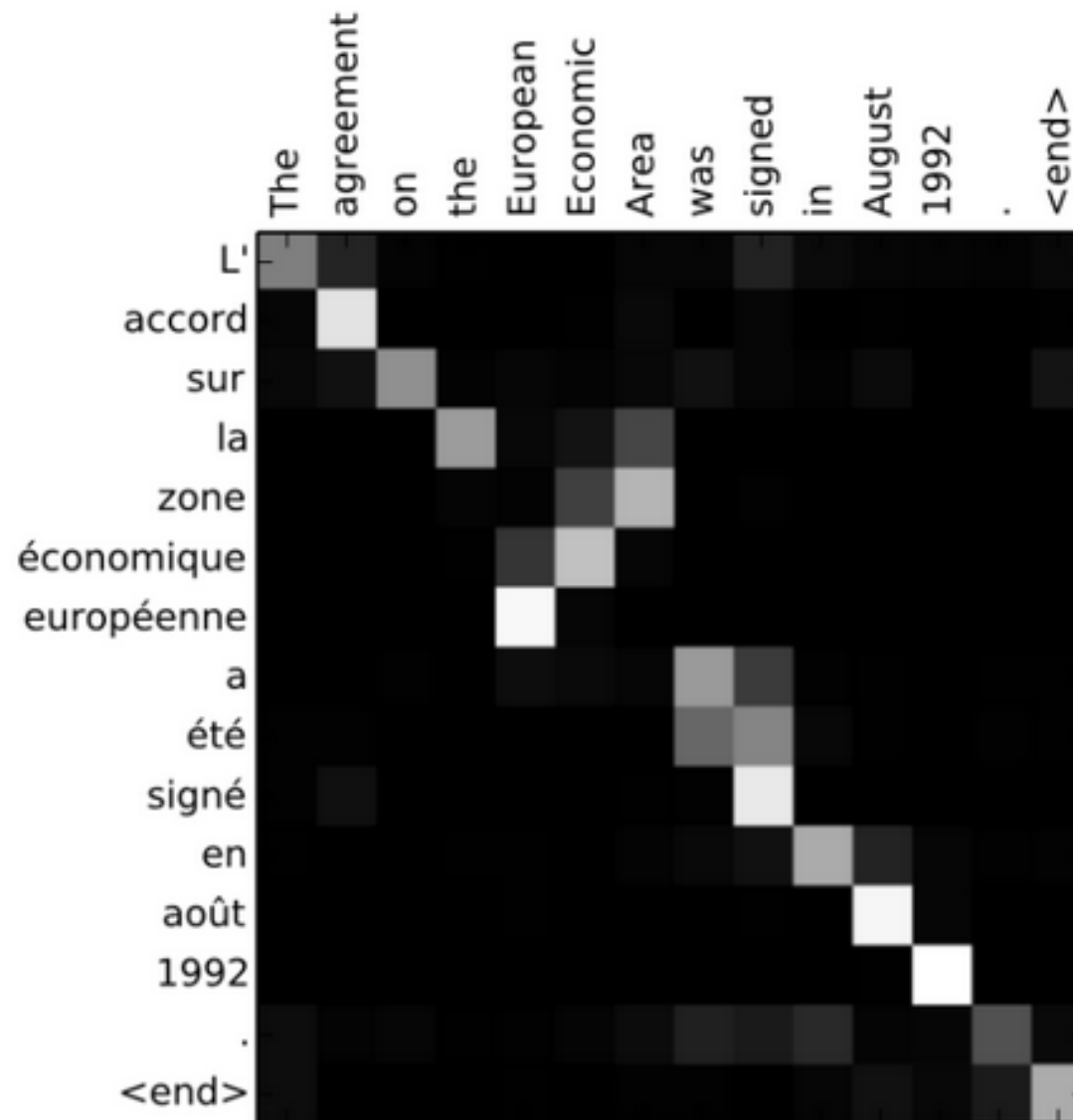$C3=g(0.3*f('Cats'),0.2*f('eat'),0.5*f('mice'))$

Seq2Seq

✓ Attention机制

✏ 对Encoder层状态的加权
从而掌握输入语句中的所有细节信息

Seq2Seq

- ✓ Attention机制

- ✍ 加权效果

Seq2Seq

✓ Bucket机制

🖉 正常情况要对所有句子进行补全

🖉 Bucket可以先分组，再计算