Hierarchical Neural Story Generation

ACL, 2018

31.7k

r/WritingPrompts · Posted by u/marsh-da-pro 1 year ago

[WP] When you die, you appear in a cinema with a number of other people who look like you. You find out that they are your previous reincarnations, and soon you all begin watching your next life on the big screen.

Writing Prompt

539 Comments Share Save Give Award Hide Report ••• 92% Upvoted

rarelyfunny 2.4k points · 1 year ago

Once, I had travelled with my schoolmates to the Royal Albert Hall in London. It struck me then as cavernous, almost as if the architect had taken a traditional gladiator's arena, slapped a dome over it, then filled it with a winding domino-string of seats in concentric circles. Four storeys of seats, all tilted slightly to face the stage, easily four, five thousand people sitting enraptured by the musical landscapes evoked by the symphony.

This theatre I was now in, was easily five, six times that size. I couldn't be sure, actually, because there were no edges which I could perceive without my vision starting to swim.

"Welcome, welcome!" boomed a voice from the stage. The spotlights swivelled to where I was standing, bathing me in golden luminance. "A warm welcome for Gerry Hanley, please! As you all have seen, he lived a long and fruitful life, yielding in the end only to old age! A peaceful end, if you will!"

I didn't know how to react to the entire audience suddenly rising to their feet, clapping as one for me. I was a schoolteacher in my life. I was used to combative classrooms, and certainly not once had my students ever thought to shower such appreciation for me. I waved weakly in response.

"And now for the results... Gerry Hanley will be going to... Team Blue!"

The groans from half the theatre were drowned out only by the rapturous cheers from the rest. Confetti spilled from the rafters, and I found myself being led down from the stage and along the aisles. Along the way, other apparent team members stretched out their hands, and I high-fived as many as I could. I collapsed into my seat, and finally the spotlights deserted me. I soaked in the relative darkness for a while, glad the attention was off me. Perhaps I could now gain some measure of my bearings.

A single chime rung out through the theatre, deep and sonorous. Some people got up to leave, while others stayed in their seats, chatting with their neighbours. The giant screen on the stage lit up with the words: "Intermission – Five Minutes".

"You want to grab a drink or something? Next one's a bit heavy, a soldier in the Russian army, it seems. Might be good to stretch your legs first."

The speaker was the lady on my right. She wore her dark hair in a tidy bob, and was clad in a sensible evening gown. Habit prodded me to introduce myself and to ask for her name, and we shook hands.

- Gated Linear Unit
- Multi-head Attention
- Conv Seq2Seq

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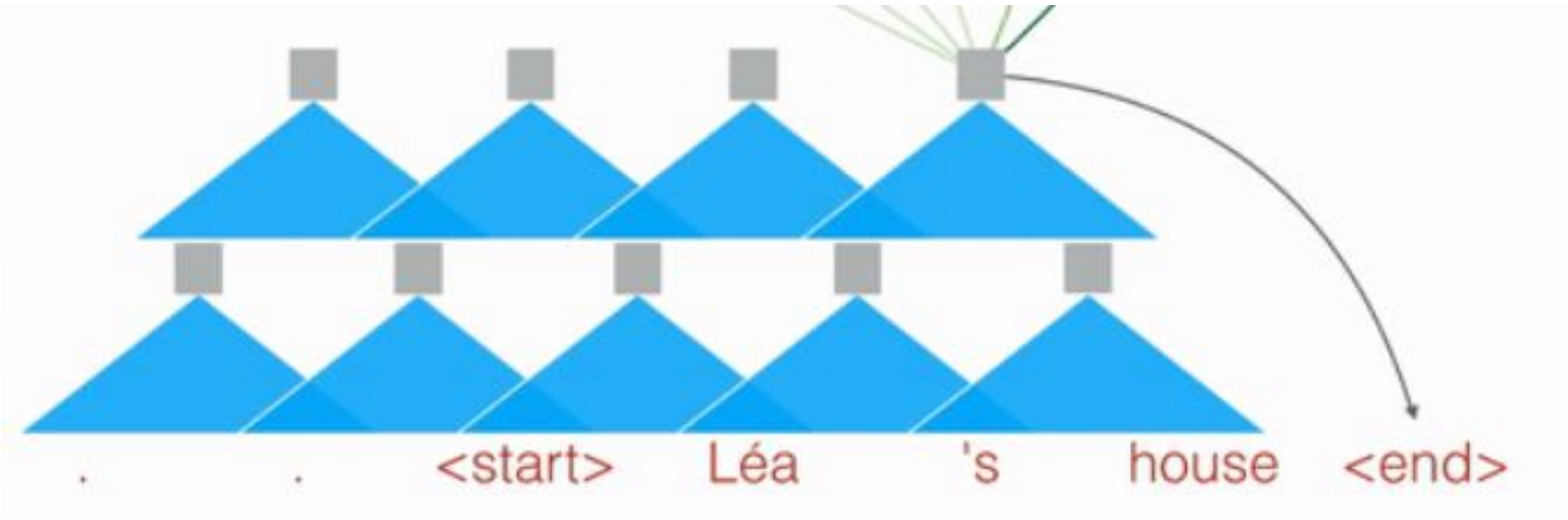
Convolutional Seq2Seq

- Compared with RNN:
  - 1. Run Faster
  - 2. Capture dependencies of different length between words easily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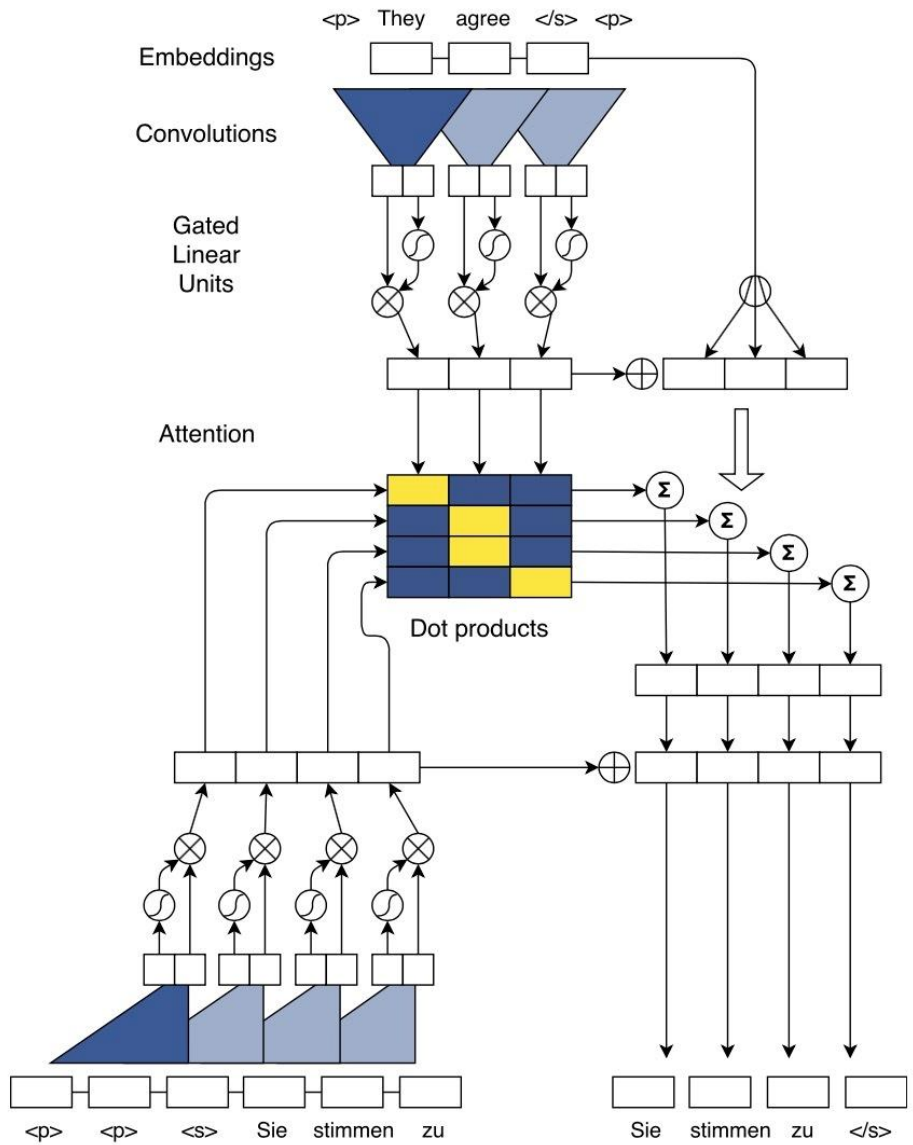
<p> They agree </s> <p>
Embeddings
Convolutions
Gated
Linear
Units
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Dot products
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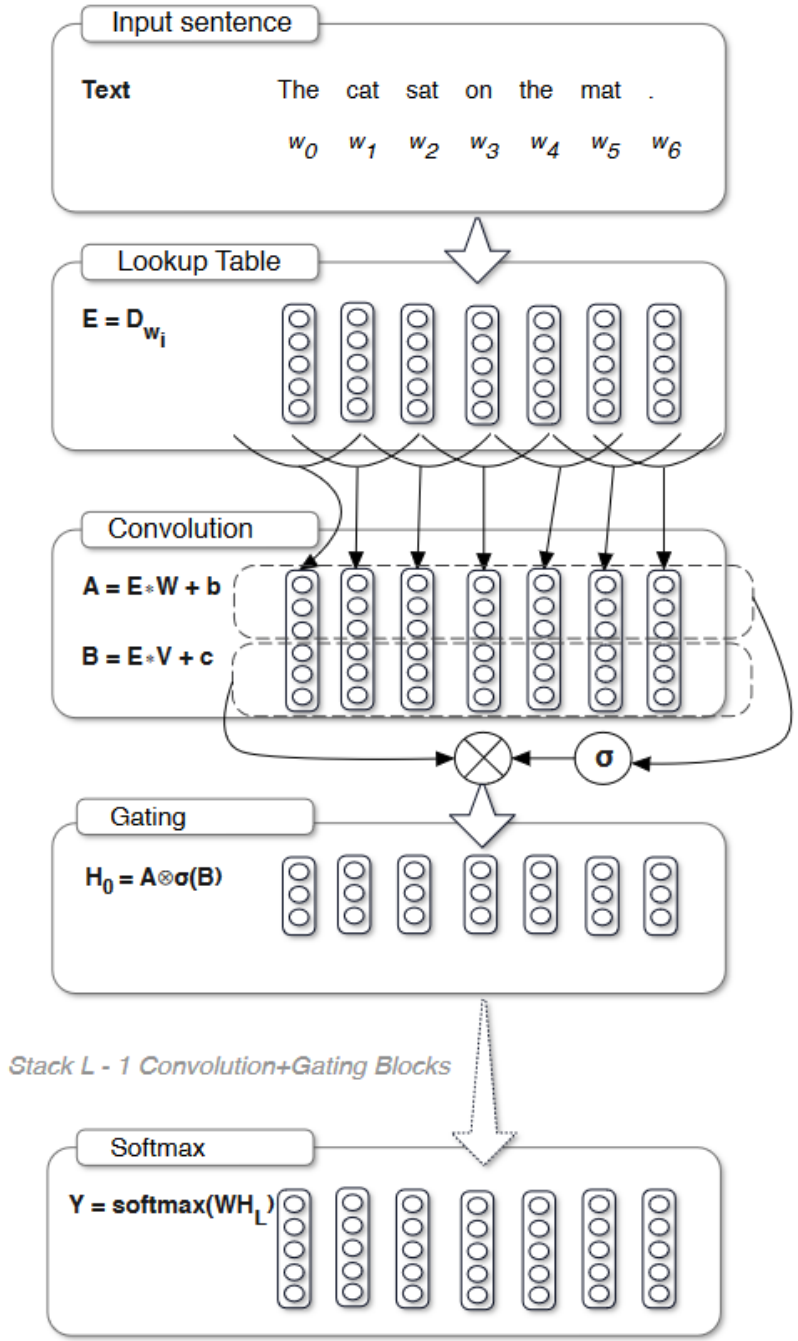
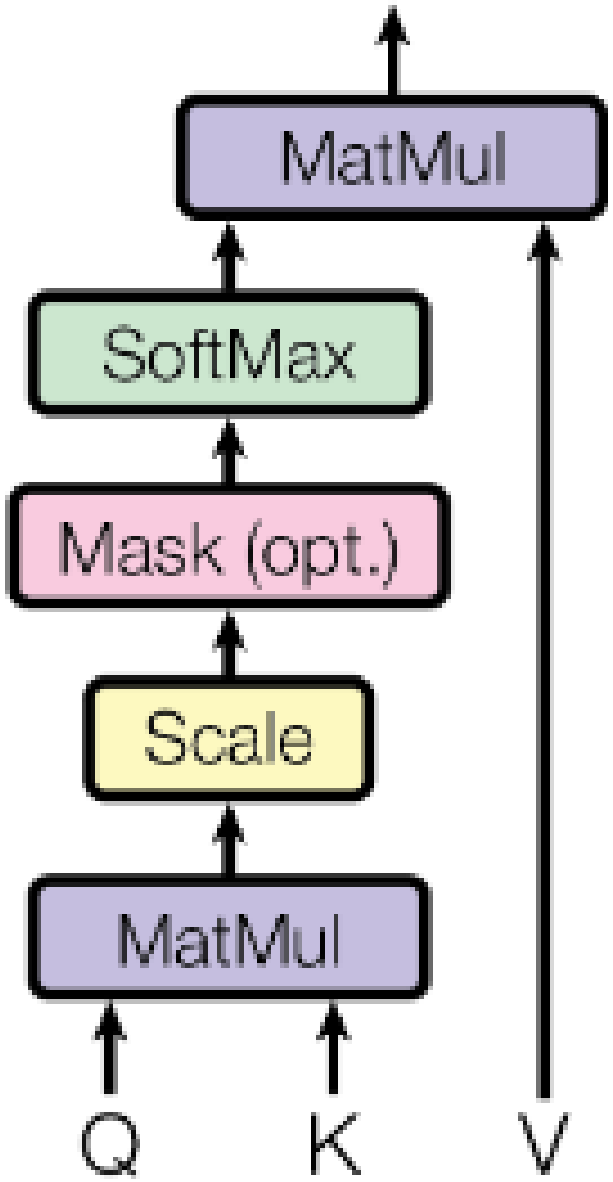
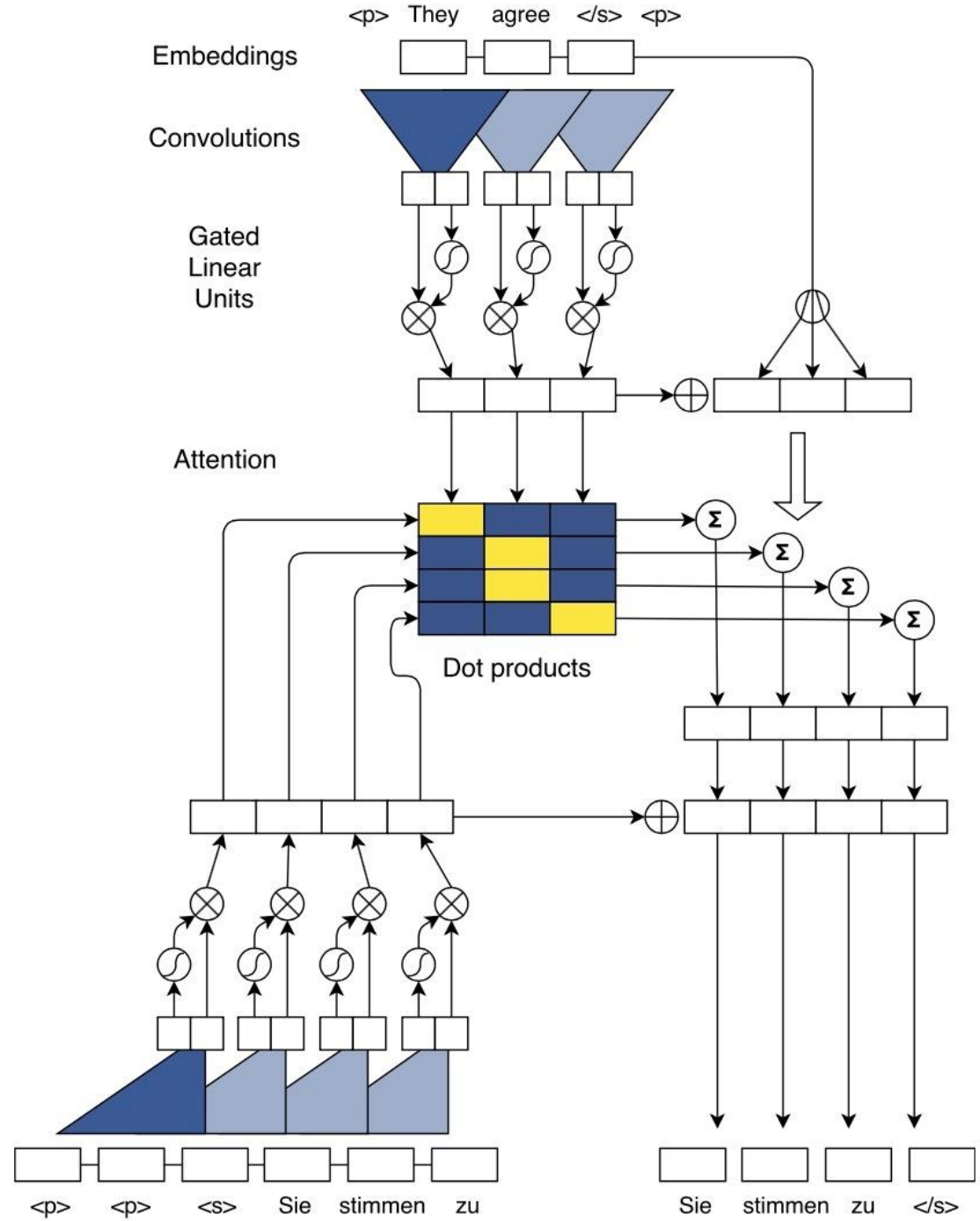
- Gated Linear Unit (GLU)
- Attention


Input sentence
Text
The cat sat on the mat .
w_0 w_1 w_2 w_3 w_4 w_5 w_6
Lookup Table
$E = D_{w_i}$
Convolution
$A = E * W + b$
$B = E * V + c$
σ
Gating
$H_0 = A \otimes \sigma(B)$
Stack L - 1 Convolution+Gating Blocks
Softmax
$Y = \text{softmax}(WH_L)$


MatMul
SoftMax
Mask (opt.)
Scale
MatMul
Q
K
V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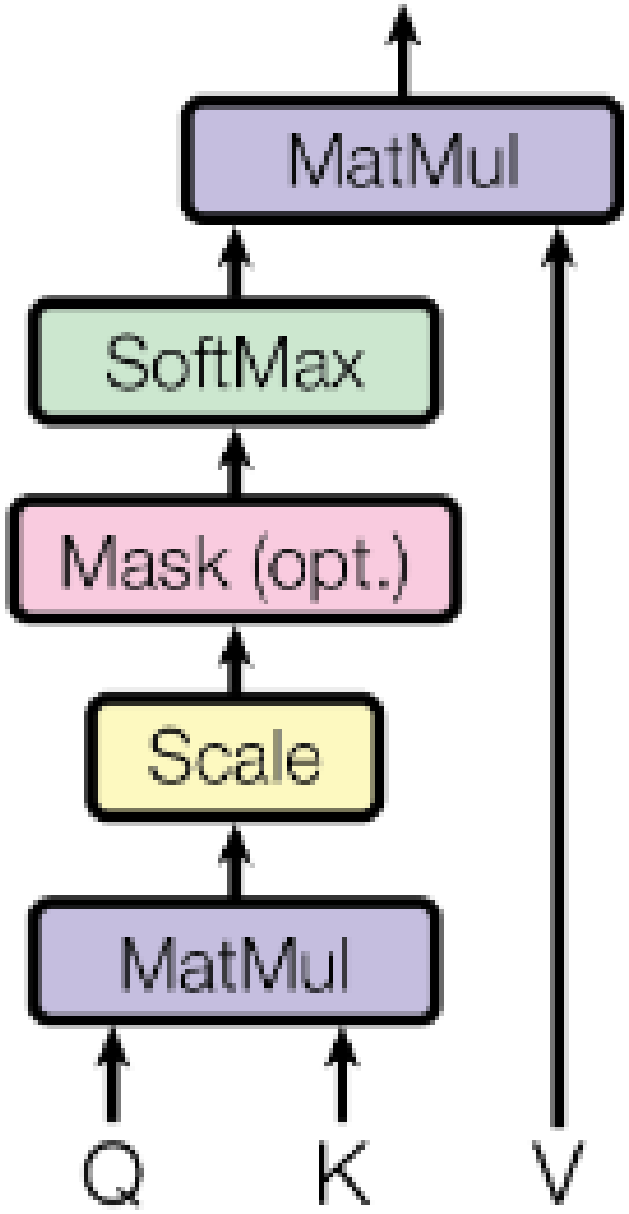
MatMul
SoftMax
Mask (opt.)
Scale
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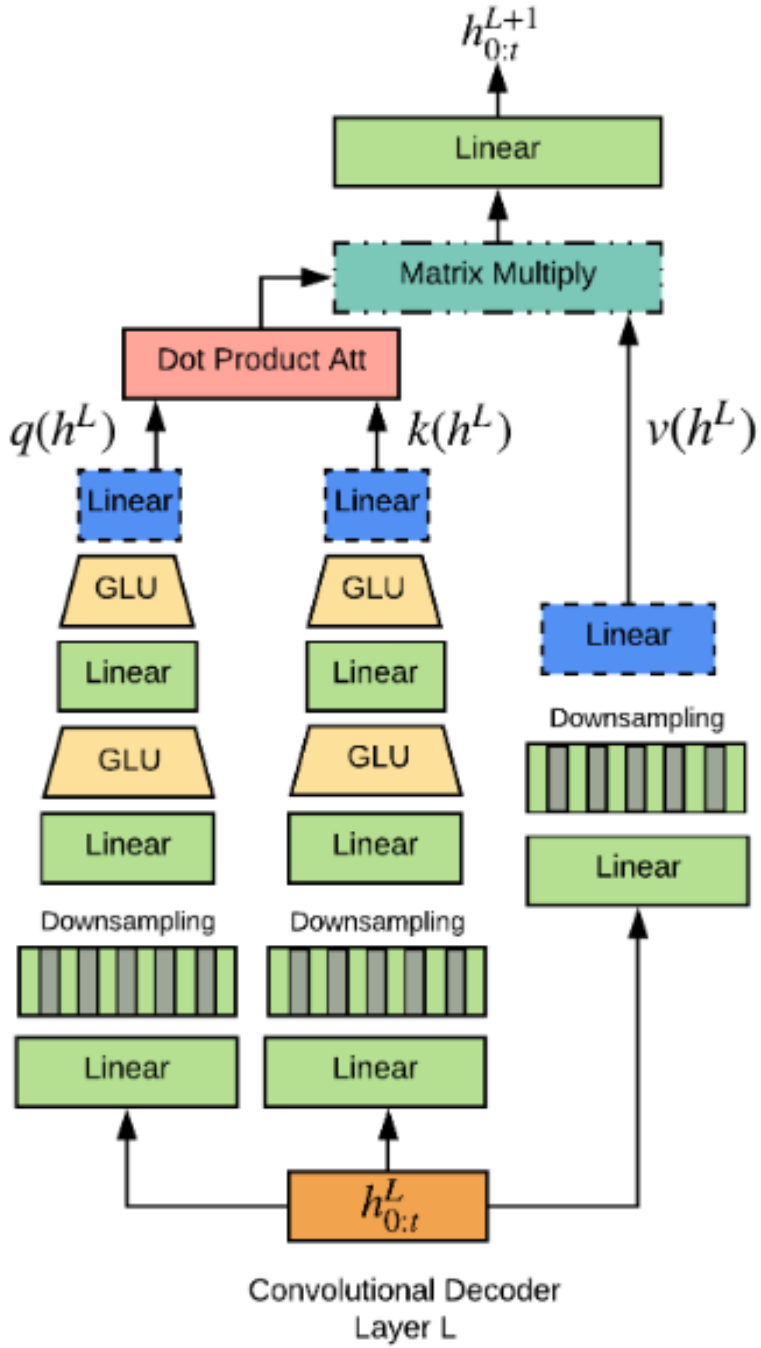
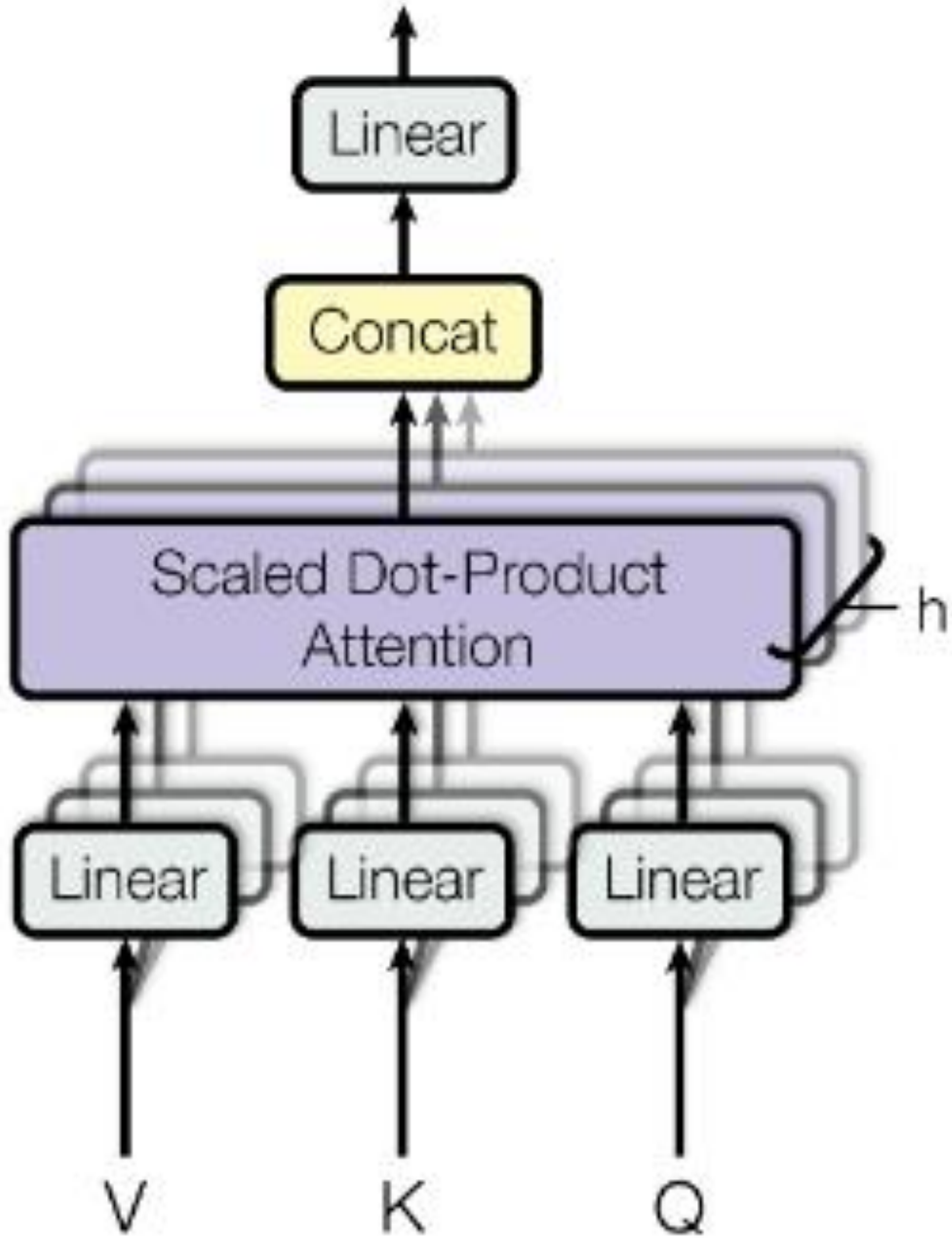
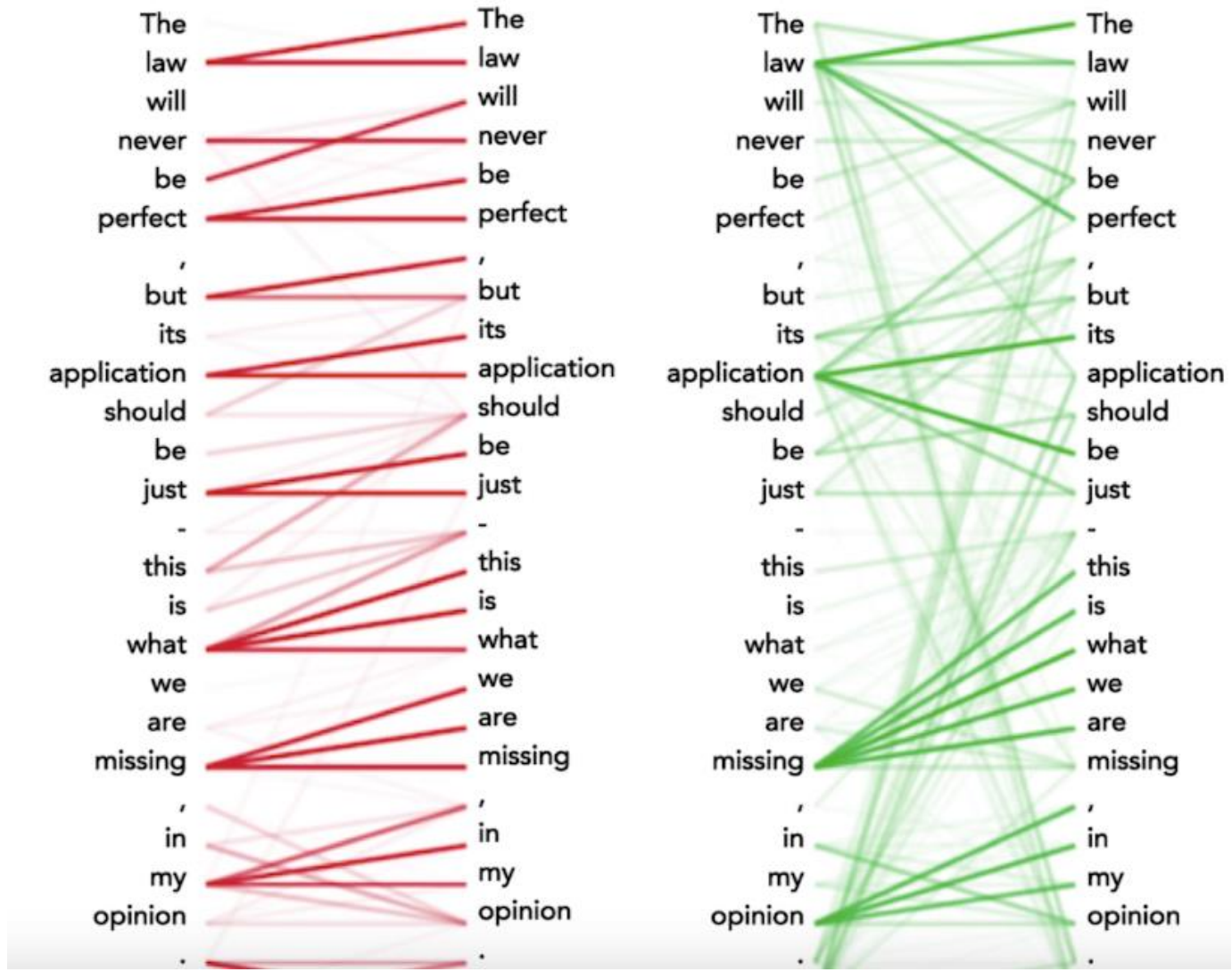

$h_{0:t}^{L+1}$
Linear
Matrix Multiply
Dot Product Att
$q(h^L)$
$k(h^L)$
$v(h^L)$
Linear
Linear
Linear
GLU
GLU
Linear
Linear
Linear
GLU
GLU
Linear
Linear
Downsampling
Linear
Downsampling
Downsampling
Linear
Linear
$h_{0:t}^{L}$
Convolutional Decoder
Layer L


Linear
Concat
Scaled Dot-Product Attention
h
Linear
Linear
Linear
V
K
Q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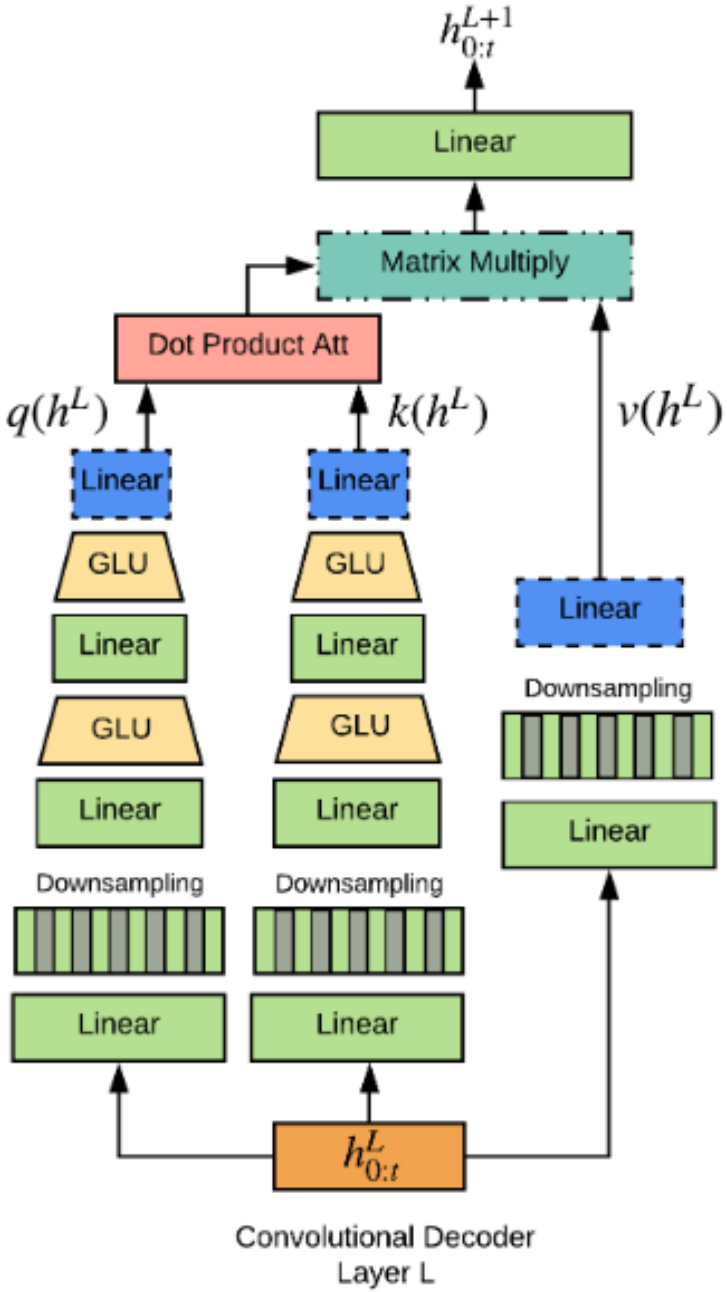
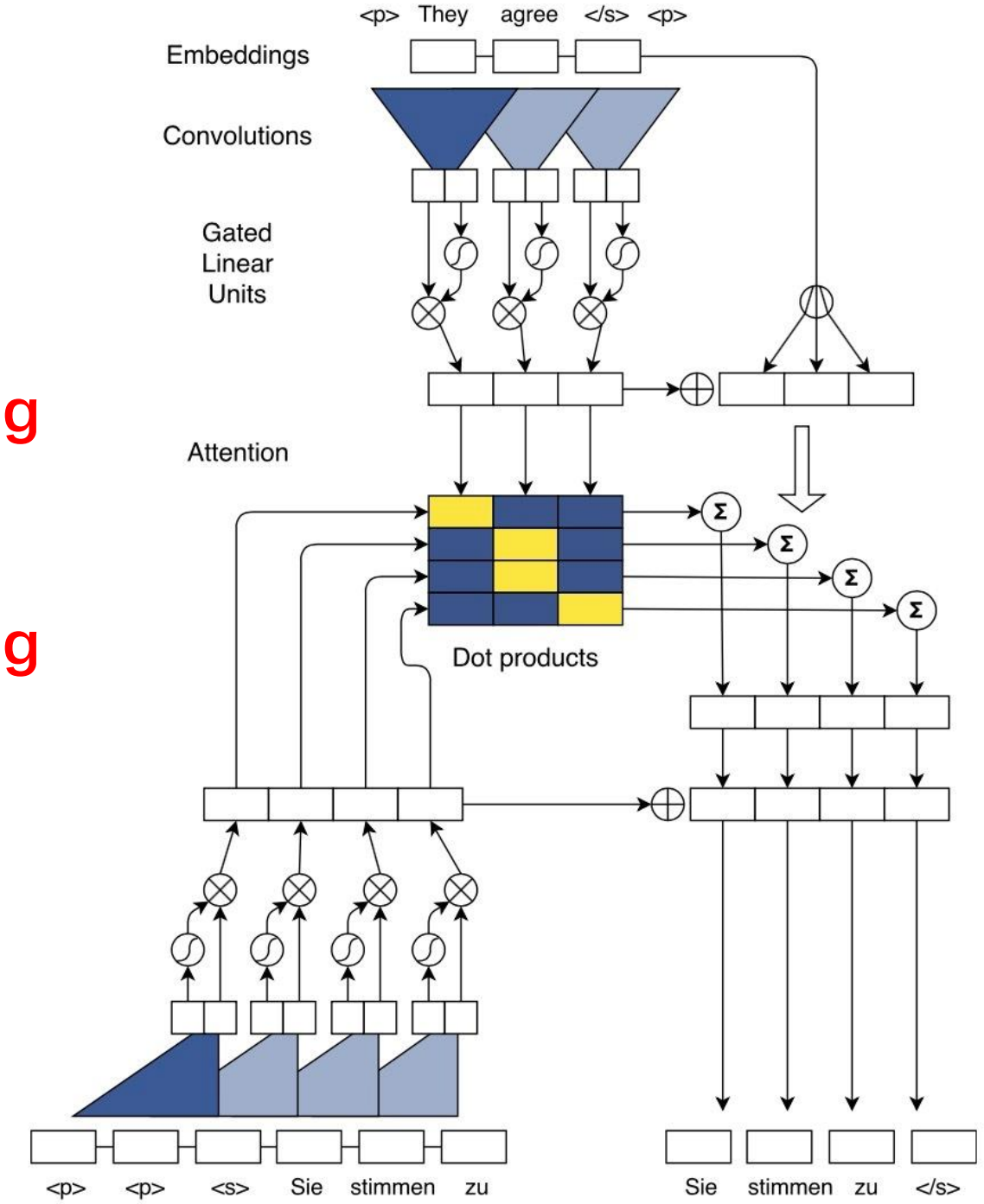
Multi-Scale

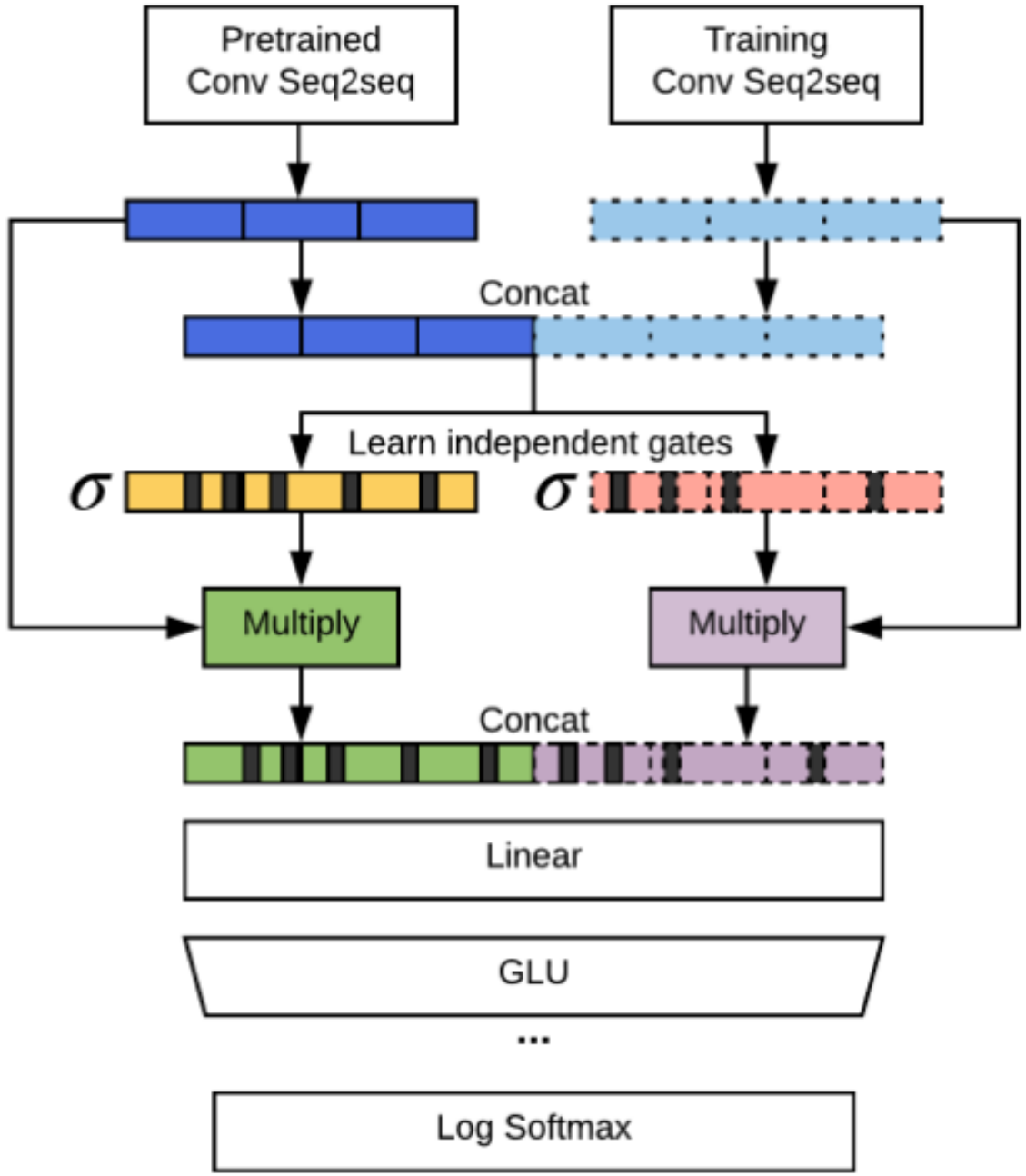

$h_{0:t}^{L+1}$
Linear
Matrix Multiply
Dot Product Att
$q(h^L)$
$k(h^L)$
$v(h^L)$
Linear
Linear
Linear
GLU
GLU
Linear
Linear
Linear
GLU
GLU
Linear
Linear
Downsampling
Linear
Downsampling
Downsampling
Linear
Linear
$h_{0:t}^{L}$
Convolutional Decoder
Layer L

Word Embedding

+

Position Embedding




Pretrained
Conv Seq2seq
Training
Conv Seq2seq
Concat
Learn independent gates
σ
σ
Multiply
Multiply
Concat
Linear
GLU
...
Log Softmax

$$g_t = \sigma(W[h_t^{\text{Training}}; h_t^{\text{Pretrained}}] + b)$$
$$h_t = g_t \circ [h_t^{\text{Training}}; h_t^{\text{Pretrained}}]$$

Example Prompt 1: Aliens start abducting humans

It has been two weeks, and the last of my kind has gone. It is only a matter of time until there will be nothing left. I'm not sure what the hell is going on... I can't think. I can hear a distant scream. I think of a strange, alien sound. I try to speak, but am interrupted by something, something that feels like a drum, I ca not tell. I mean I'm just a little bit older than an average human. But I can, and I can feel the vibrations . I hear the sound of a ship approaching. The ground quakes at the force of the impact, and a loud explosion shatters the silence.

Example Prompt 2: The scientists have discovered something terrible .

The scientist stood there, a little dazed as he stared.
"What is it?" He asked.
"This...this...Thing...This is a virus. A chemical that can destroy entire planet and it is a very small, complex, chemical that could destroy any planet." The scientist replied. His lab assistant looked down at the tablet.
"I've just discovered it. I can't believe it. It looks like it's made of some sort of chemical that's very dangerous."
" Well, there's a virus on the ground. It's very effective..." " I can't believe what it is." he said, pointing to the scientist .
" We don't know what this thing is. We haven't seen anything like it . We can't even see anything like this. " Dr. Jones stared at the scientist for a moment.
"What do you mean what does it do ?"
"It...It 's a monster."

Example Prompt 3: The silence before the storm comes

"I'm sorry," she said "I can't do this anymore."
She sat in the grass, the grass blowing behind her as she sat staring at the sky. Her eyes were still closed but she was still staring at it. Her hand was still shaking, her eyes closed as she watched the rain roll in and out of view. She could see the world through her eyelids now. Her hands were still shaking like she hadn't eaten in days. Her fingers were still clenched tight and her fingers were now shaking. She wasn't even sure if she was going to cry or if she just wanted to cry. It wasn't until she was close enough to hear the words.
"I ...I just...I need to...I ..." She was crying now and then, the rain was picking up. Her lips were shaking now and she could see that the storm was getting closer and closer. Her heart stopped when she heard the thunder. She knew it was coming. The storm was

Chat More If You Like: Dynamic Cue words Planning to Flow Longer Conversations

Lili Yao, Ruijian Xu, Chao Li, Dongyan Zhao and Rui Yan

Introduction

- In human-human conversations, people tend to talk about highly relevant aspects and topics during a chat session.

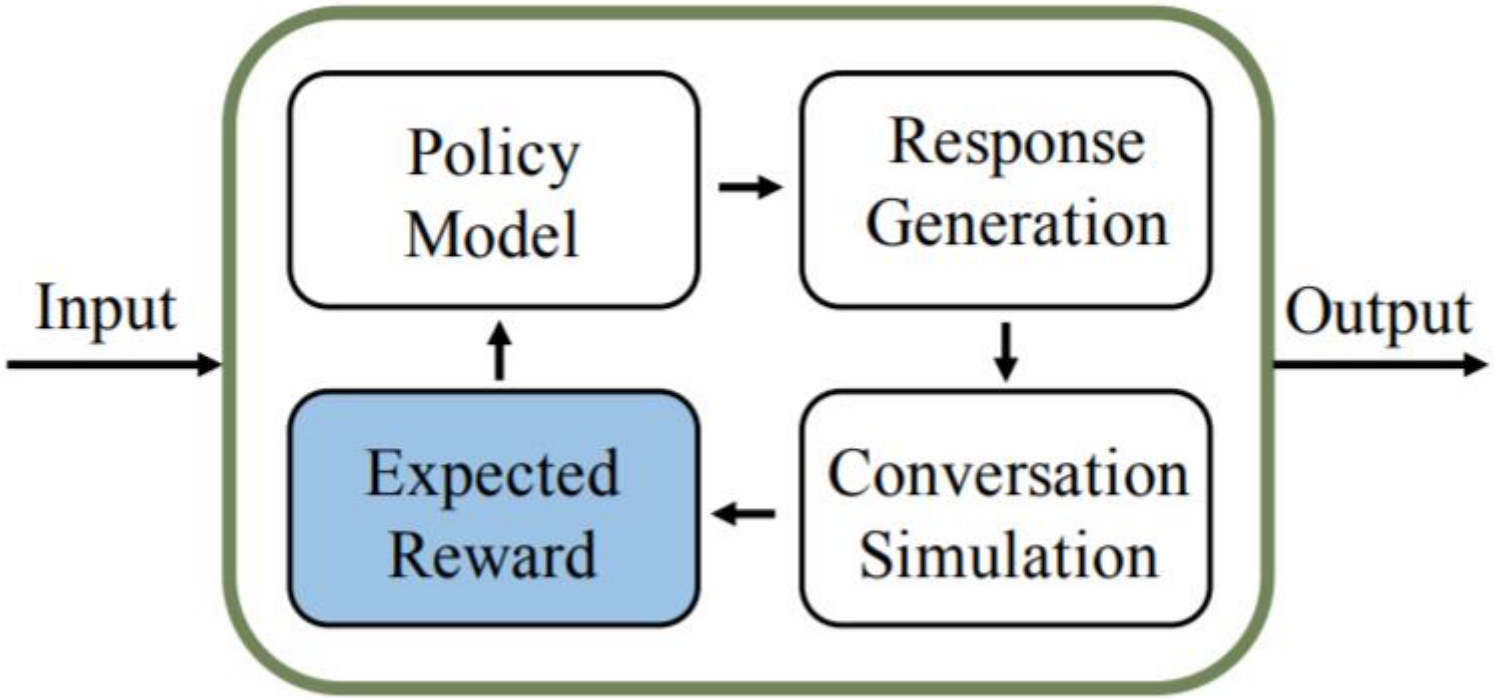
- It is difficult and challenging to launch such a human-computer conversation system.
  - Topics augmented neural response generation haven’t been applied to ongoing dialogues.
  - It is complicated to model the practical flow of a real conversation.

Main contributions

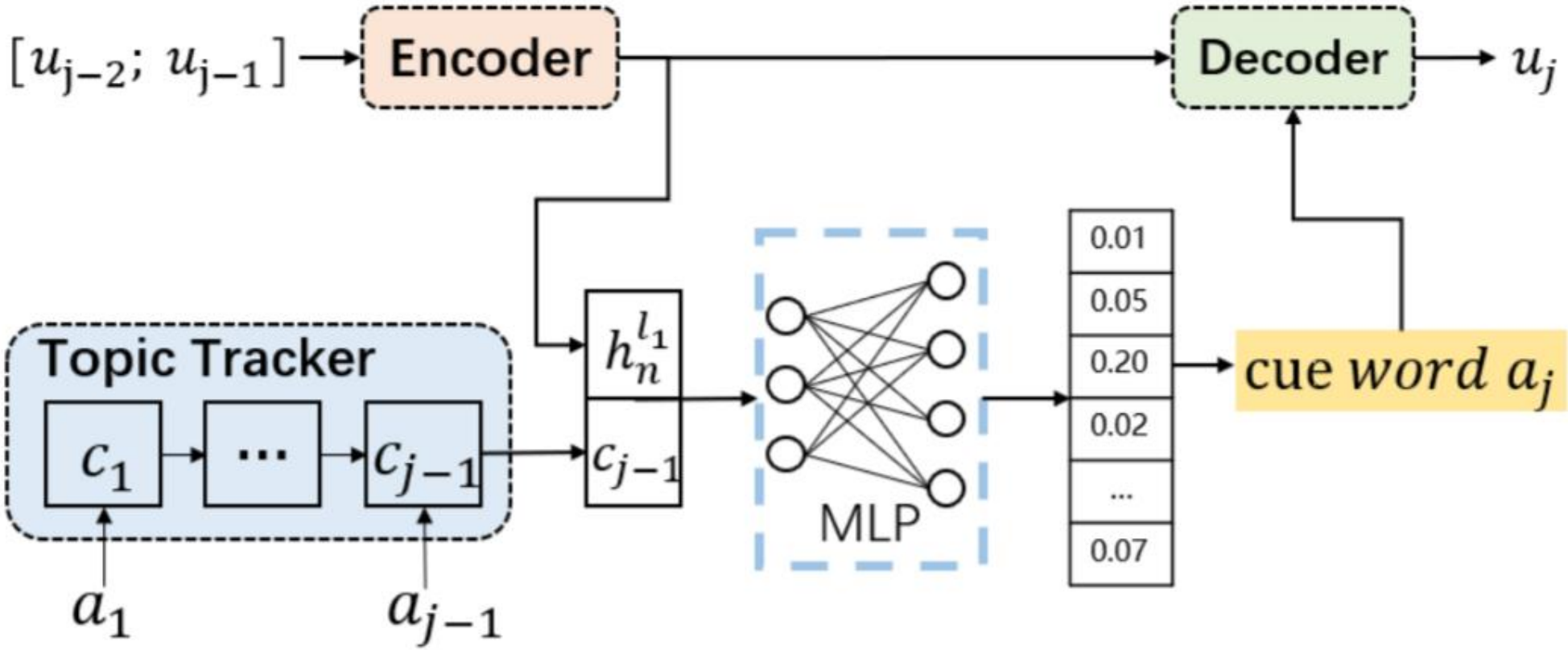
- Adopt cue words to shape the conversation flow, and unify cue words prediction and responses generation in an end-to-end framework.
- Propose to measure the quality of a cue word from two aspects: effectiveness and relevance.

Cue word	Utterance
-	A: 去哪里(Where are you going?)
回家(home)	B: 回家(Home.)
上班(working)	A: 好吧，我还在上班(Well, I am still working.)
加班(overtime)	B: 加班？你太辛苦了(Work overtime? You are too hard.)
委屈(aggrieved)	A: 我也很委屈(I feel aggrieved.)

The pipeline of the proposed RLCw system.



The end-to-end framework for cue words selection and topic augmented response generation.



Reinforcement learning

- State

$$s_{i,k} = [h_n^{l_1}, c_{i,k-1}]$$

- Action
  - Cue word
- Policy

$$p\left(a_{i,k}|s_{i,k}\right) = \textit{softmax}\left(\tanh\left(W_a s_{i,k} + b_a\right)\right)$$

- Reward
  - Effectiveness
  - Relevance

$$r_1 = \log cos\left(a_{i,k}, u_{i,k}\right) \cdot cos\left(a_{i,k}, u_{i,k-1}\right)$$

$$r_2 = m\left(u_{i,k}, \left(u_{i,j-2}, u_{i,j-1}, \ldots, u_{i,k-1}\right)\right)$$

$$r_{i,k} = \alpha r_1 + (1-\alpha) r_2$$

Algorithm 1 Training Process

N: number of training instances.
T: simulation turns.
M: sampling times.
L_i: number of utterances in i-th dialogue session.
Jointly pre-train policy model and cue word augmented response generation model with supervised learning.
for $i = 1...N$ **do**
    for $j = 1...L_i$ **do**
        $s_{i,j} = [c_{i,j-1}; h_n^{l_1}]$;
        for $m = 1...M$ **do**
            for $k = 1...j + T - 1$ **do**
                Sample an action $a_{i,k}$ based on $s_{i,k}$
                Compute $r_{i,k}$ using Eq. 11
                Transform to state $s_{i,k+1}$
            end for
            Estimate $\mathbb{E}\left[r\left(a_{i,j}, s_{i,j}\right)\right]$ using Eq. 12
        end for
        Compute average reward $b_{i,j}$
        Update policy model $\mathcal{P}$ using Eq. 16.
    end for
end for

Experiments

- Dataset
  - public multi-turn Weibo dataset: 5, 000, 00(training), 40, 00(testing)
- Baselines
  - S2S
  - S2S-Cw
  - RL-S2S
- Evaluation Metric
  - automatic metrics
  - human judgments.

Method	Turns	Intra-session			Inter-session			# U.	# B.	# T.	# Words
		Dist-1	Dist-2	Dist-3	Dist-1	Dist-2	Dist-3				
S2S	2.57	0.52	0.52	0.41	0.01	0.05	0.10	7.83	9.65	8.63	2,435
S2S-Cw	4.38	0.52	0.57	0.46	0.01	0.07	0.16	11.74	16.36	15.20	4,733
RL-S2S	5.45	**0.58**	**0.66**	0.54	0.01	0.05	0.11	18.91	24.31	20.67	4,219
RLCw-E.	5.93	0.50	0.61	0.53	0.01	0.07	0.18	16.78	24.95	23.86	4,889
RLCw-R.	6.30	0.53	0.65	**0.56**	0.01	0.07	0.19	**19.94**	**29.69**	**28.30**	**5,726**
RLCw	**6.51**	0.52	0.64	0.55	0.01	**0.08**	**0.20**	19.43	28.95	27.44	5,637

Automatic evaluation results of our proposed model against baselines.

Choice %	RLCw *vs* S2S				RLCw *vs* S2S-Cw				RLCw *vs* RL-S2S			
	RLCw	S2S	Tie	Kap.	RLCw	S2S-Cw	Tie	Kap.	RLCw	RL-S2S	Tie	Kap.
Fluency	**48.0****	23.5	28.5	0.43	**38.8****	27.3	33.9	0.42	**41.2***	32.5	26.3	0.40
Consistency	**48.2****	25.7	26.1	0.39	**38.2***	30.8	31.0	0.42	**39.0***	32.0	29.0	0.43
Relevance	**37.0****	27.2	35.8	0.43	**34.7****	26.2	39.1	0.46	**34.3**	30.7	35.0	0.42
Informativeness	**61.5****	19.7	18.8	0.40	**51.3****	26.2	22.5	0.41	**51.6****	25.8	22.6	0.39
Preference	**37.7****	20.2	42.1	0.46	**35.8****	24.3	39.9	0.44	**34.7***	28.2	37.1	0.42

Human evaluation results on five aspects: fluency, consistency, relevance, informativeness, and overall user preference.

Source Input	等你出道	I'm waiting for your official debut.
Cue words	美→ 机智→安逸→ 发型→ 兄弟→ 撩	goddess → witty → comfort → hair style → brother → attract
Dialogue	A: 你的美女是谁 B: 机智的你 A: 你最棒，我是最漂亮的 B: 你的头像是我吗 A: 兄弟，我是你的小粉丝 B: 你是不是被我撩走了	A: Who is your goddess? B: It's you! My cute girl. A: You are the best, and I am the most beautiful. B: Do you use my photo as portrait? A: Brother, I'm your fan. B: Are you attracted by me?
Source Input	我能说我高中三年都是球头吗。这是学校规定	I have been with buzz cut for three years in high school. This is one of the school regulations.
Cue words	美女→ 做→ 找→ 重庆	beauty → work → visit → Chongqing
Dialogue	A: 哦哦，这样啊，美女，你今天回去了吗 B: 明天回了，我在做毕业设计 A: 我明天可以去找你嘛，你去哪了 B: 我去南京	A: Oh, I see. Beauty, did you go back today? B: I will go back tomorrow. I'm working on my graduation thesis. A: May I visit you tomorrow? By the way, where have you been? B: Nanjing.