Spell Once, Summon Anywhere: A Two-Level Open-Vocabulary Language Model

AAAI 2019 Technical Track

Sabrina J. Mielke *and* Jason Eisner

sjmielke@jhu.edu, jason@cs.jhu.edu
Department of Computer Science, Johns Hopkins University, Baltimore, MD, USA

Language modeling: a generative story of text

$p(\text{the cat chased the})$

Language modeling: a generative story of text

$$p(\text{the cat chased the}) = p(\text{the})$$

Language modeling: a generative story of text

$$p(\text{the cat chased the}) = p(\text{the}) \cdot p(\text{cat} \mid \text{the})$$

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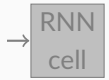

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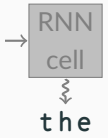

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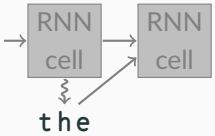

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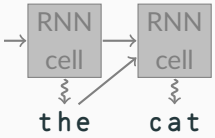

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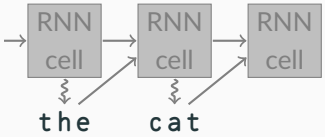

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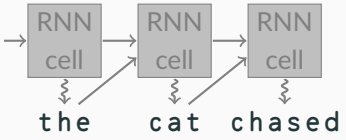

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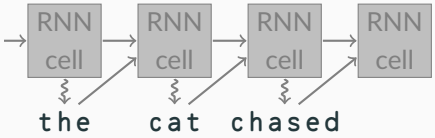

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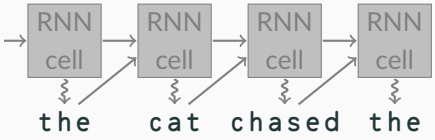

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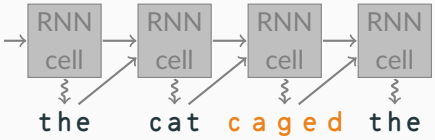

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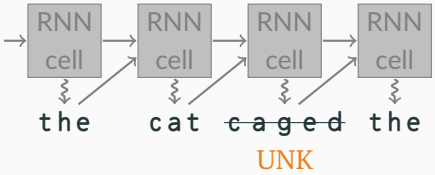

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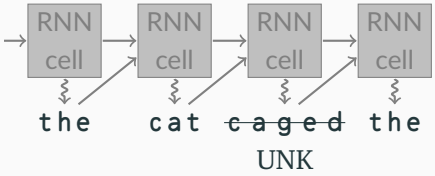

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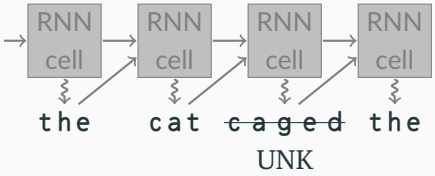

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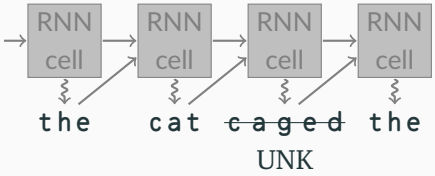

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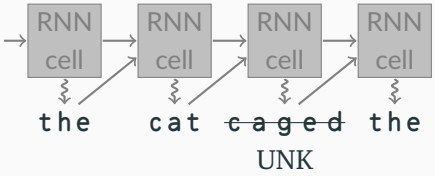

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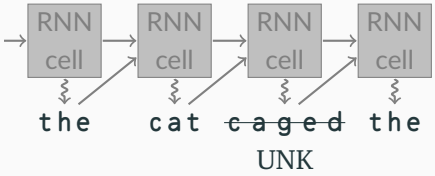

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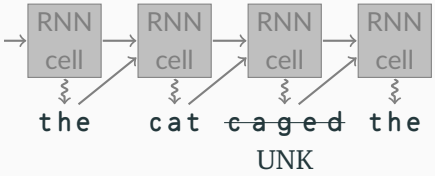

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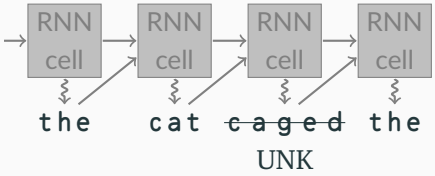

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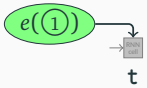

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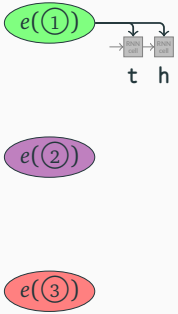

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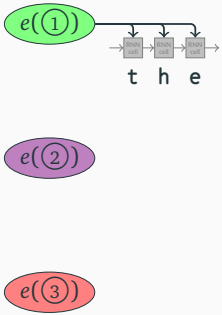

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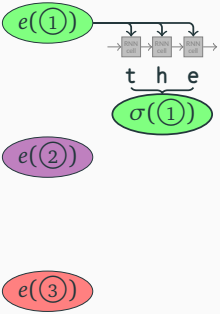

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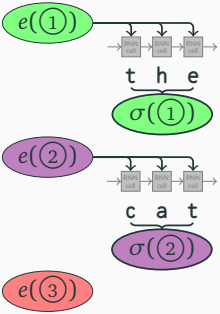

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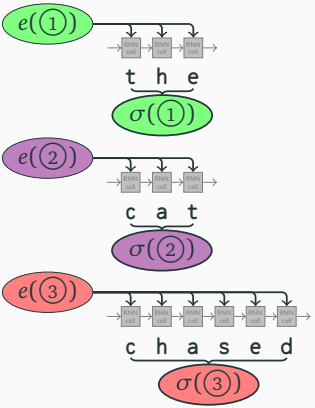

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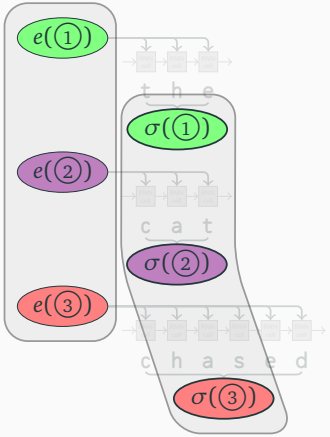

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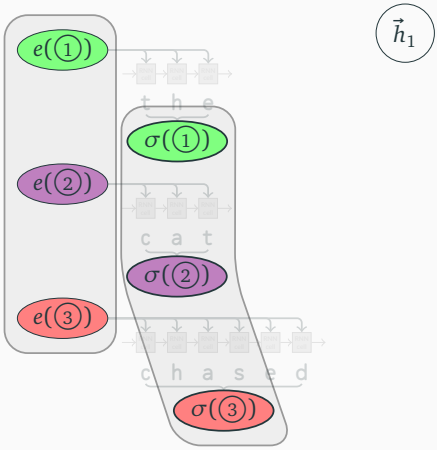

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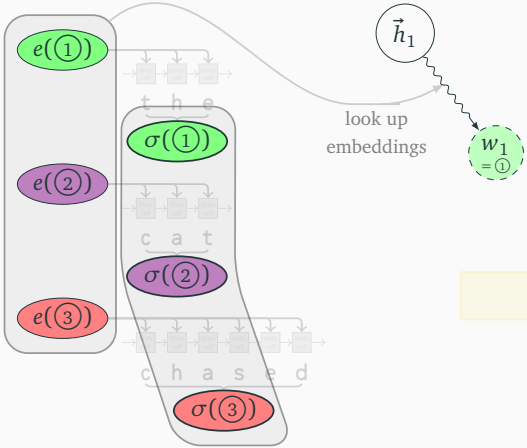

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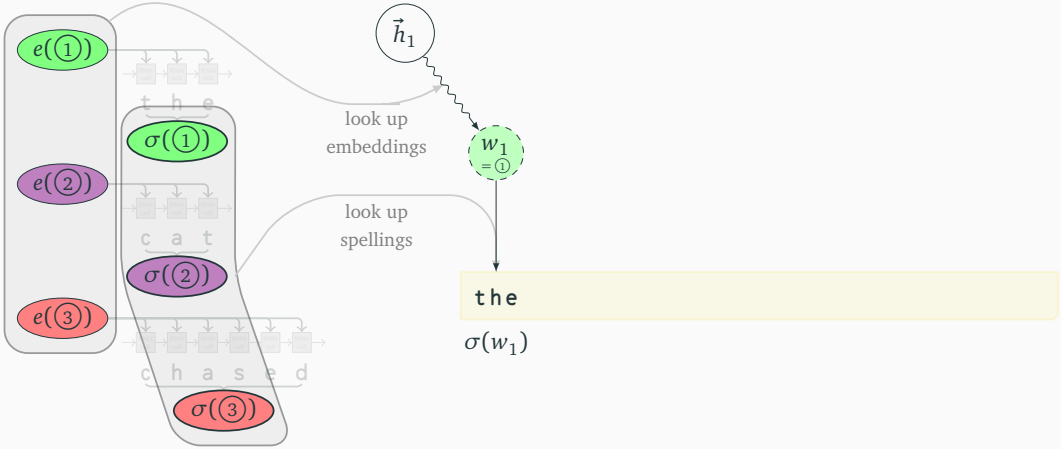

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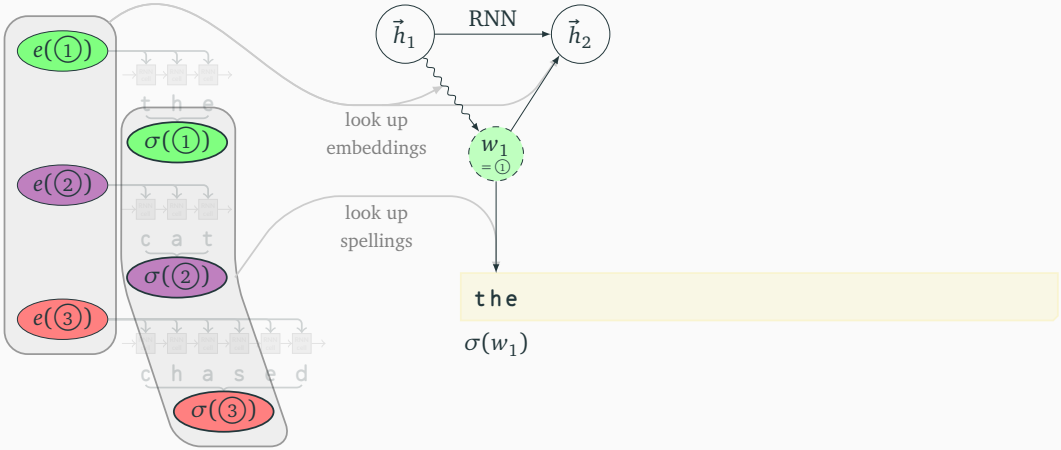

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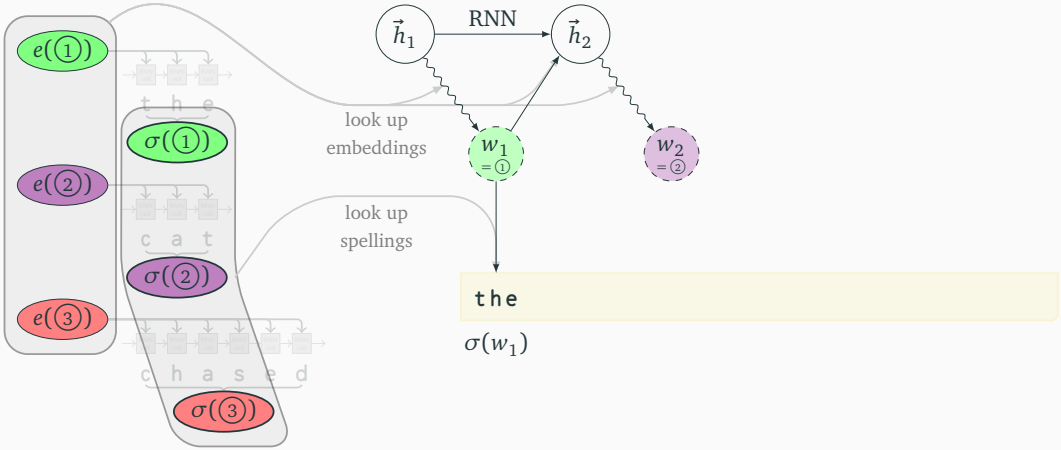

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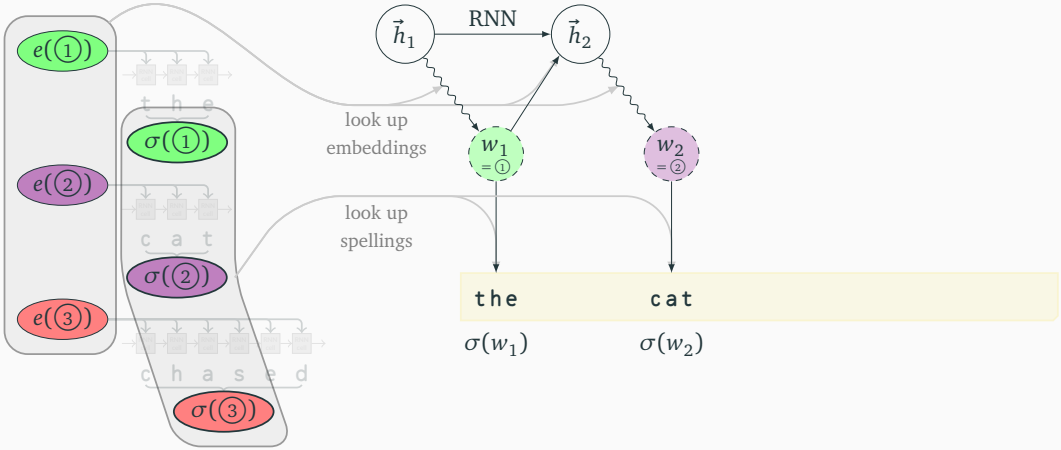

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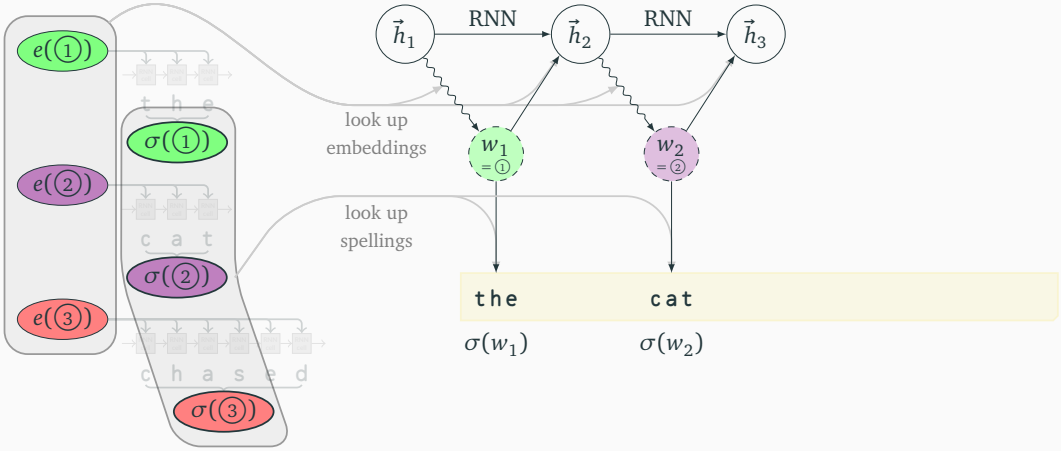

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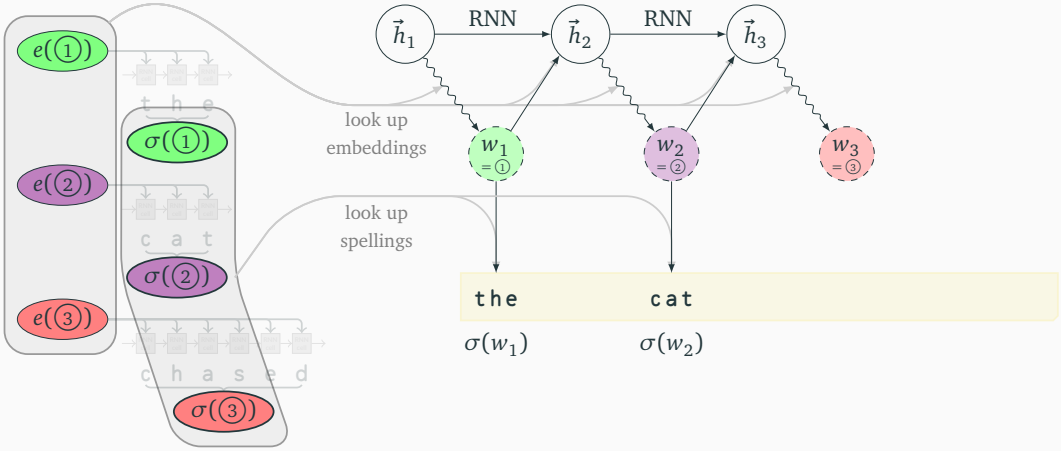

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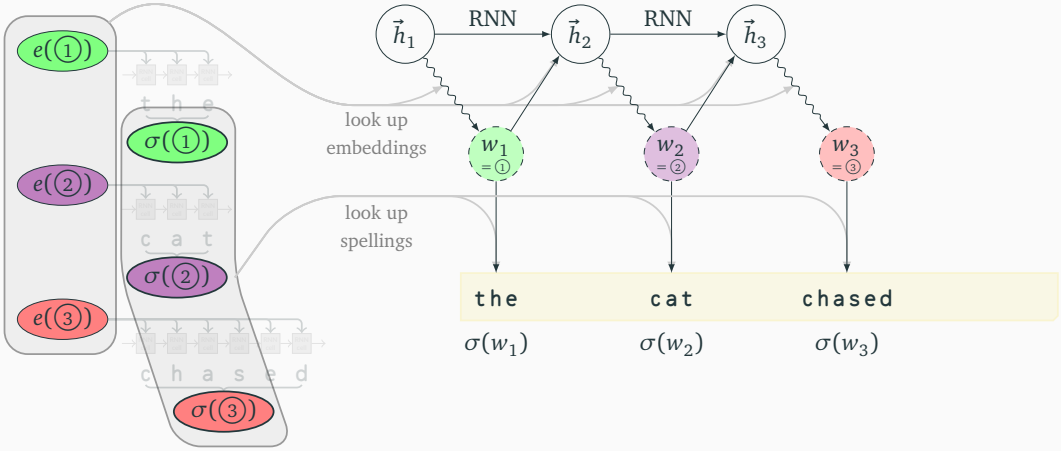

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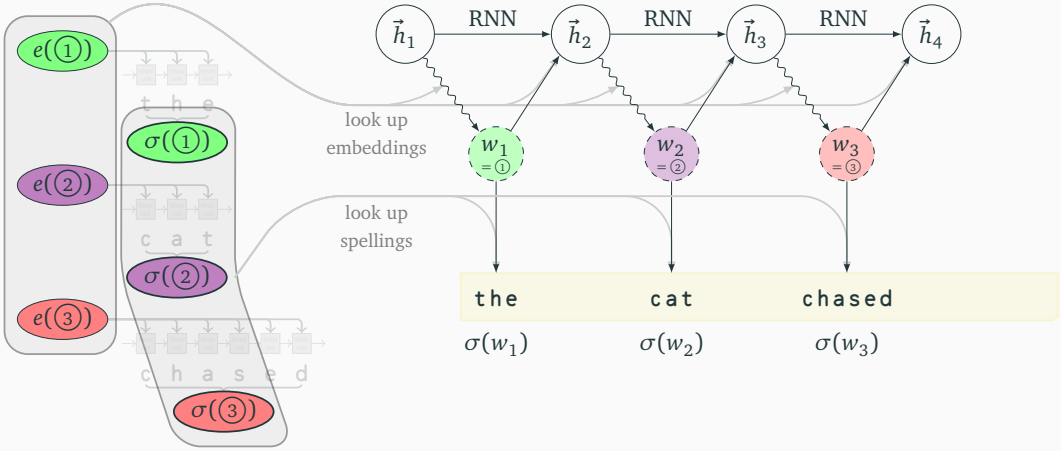

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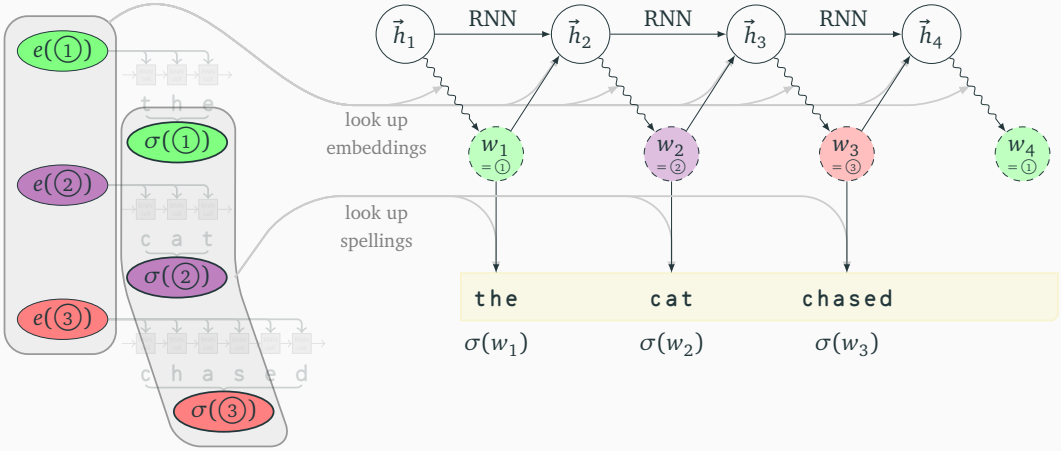

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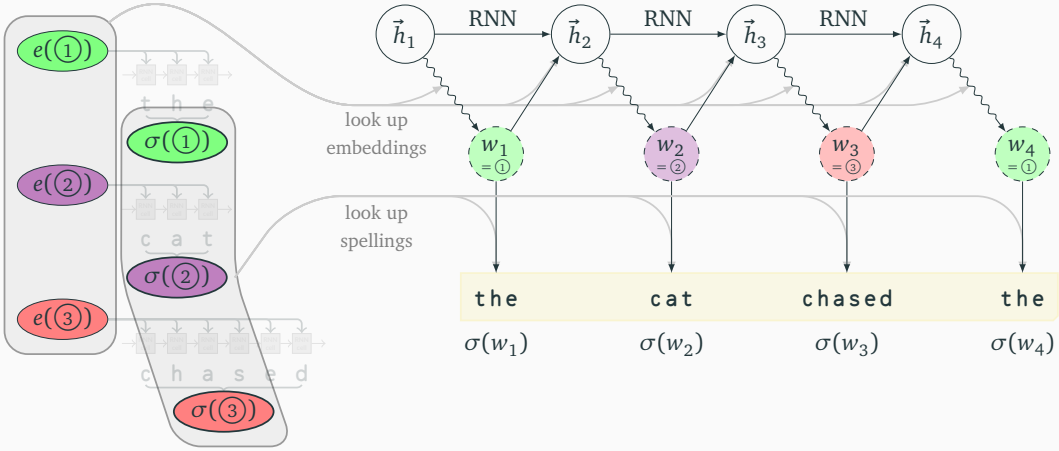

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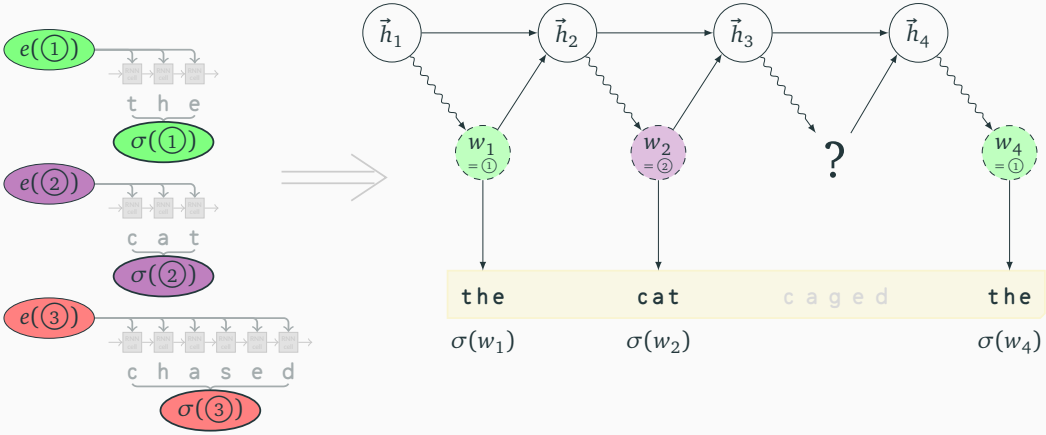

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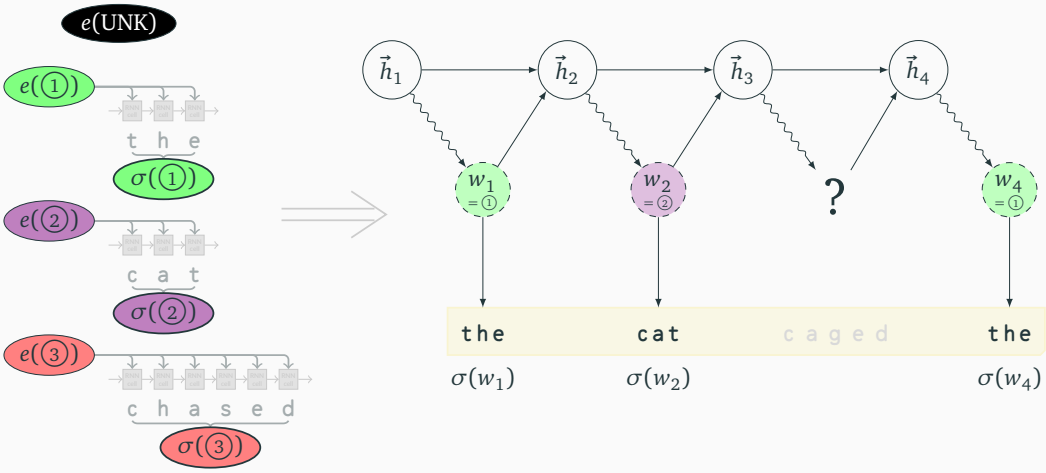

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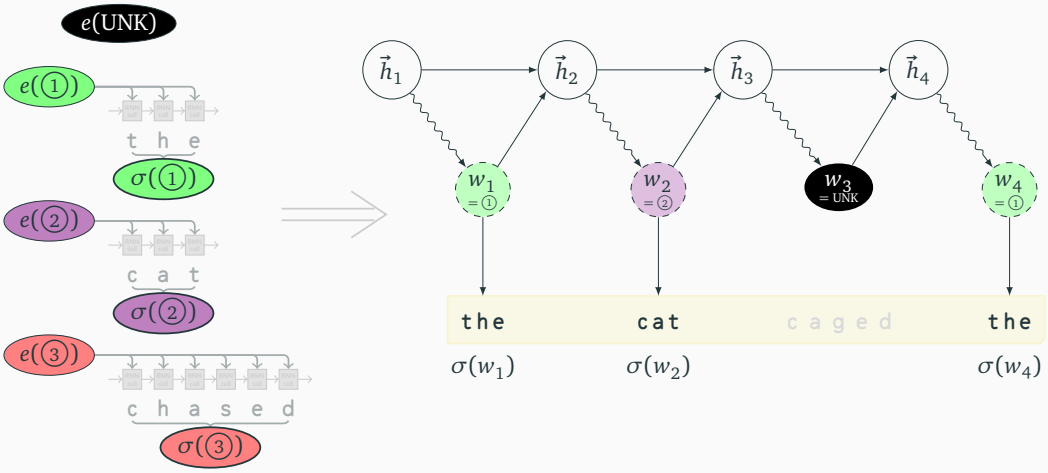

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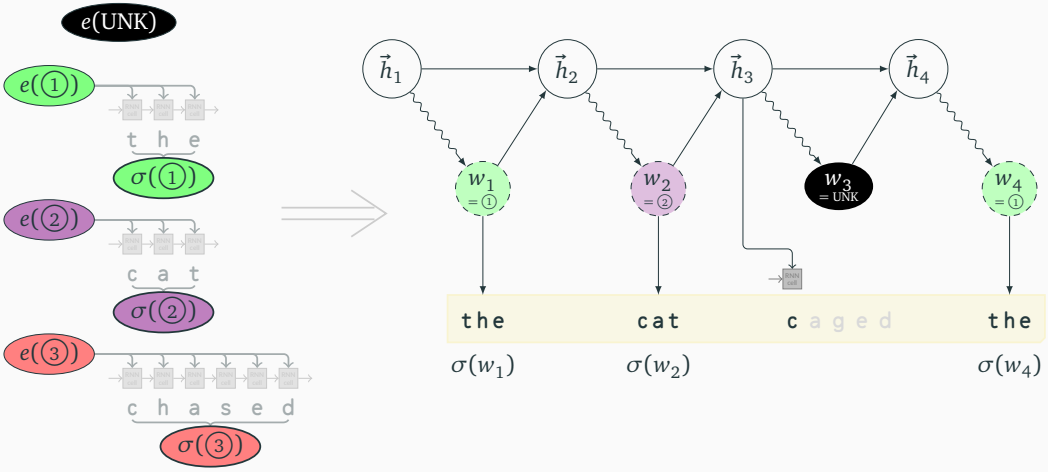

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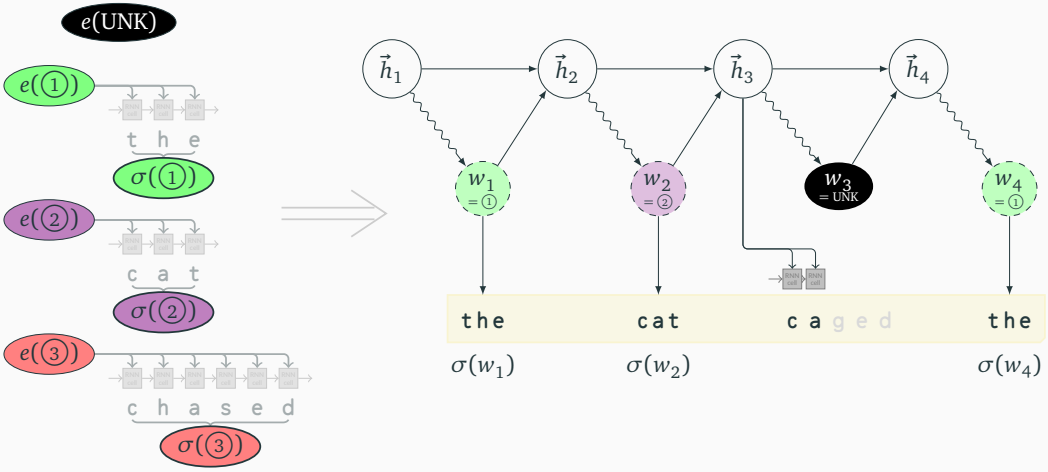

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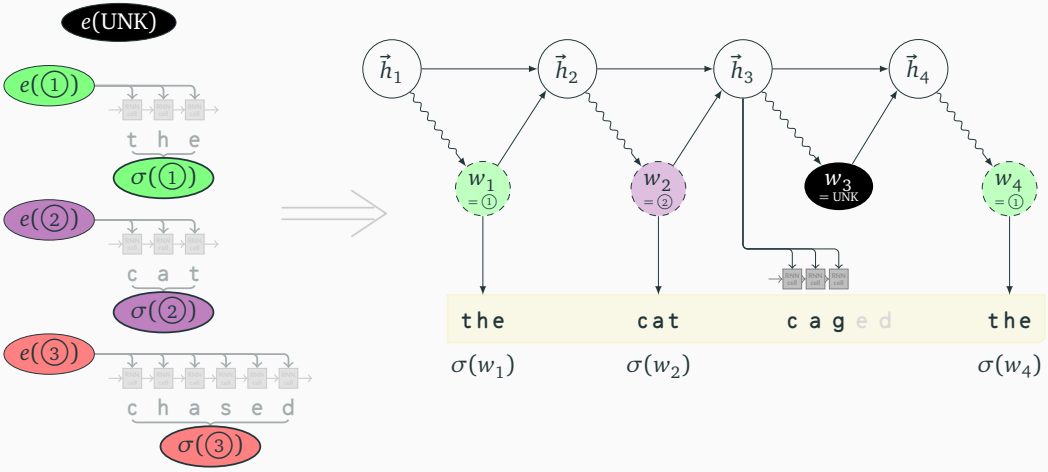

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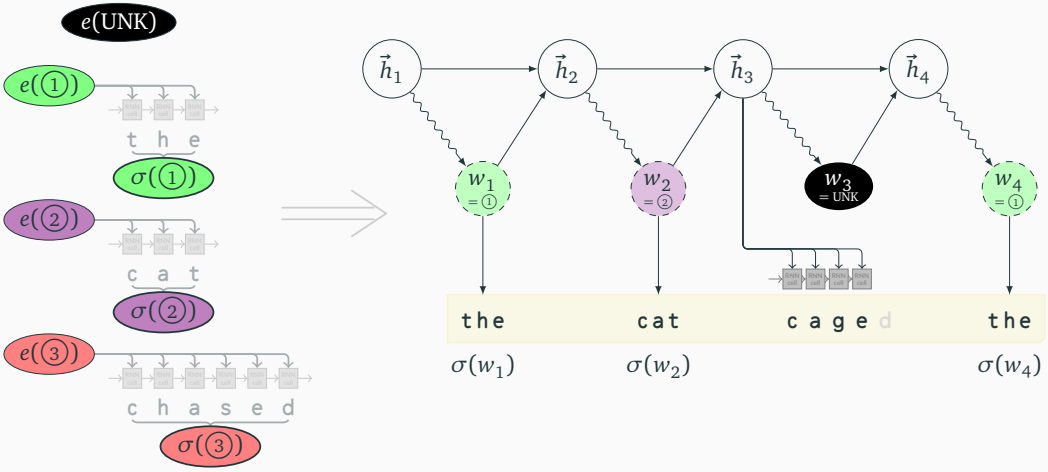

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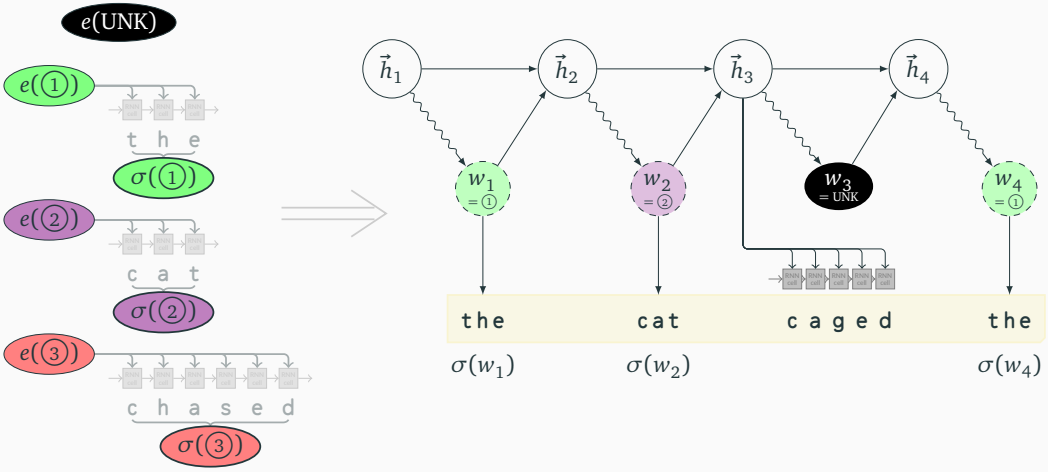

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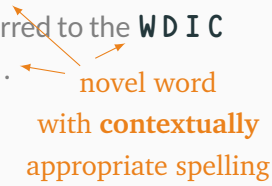

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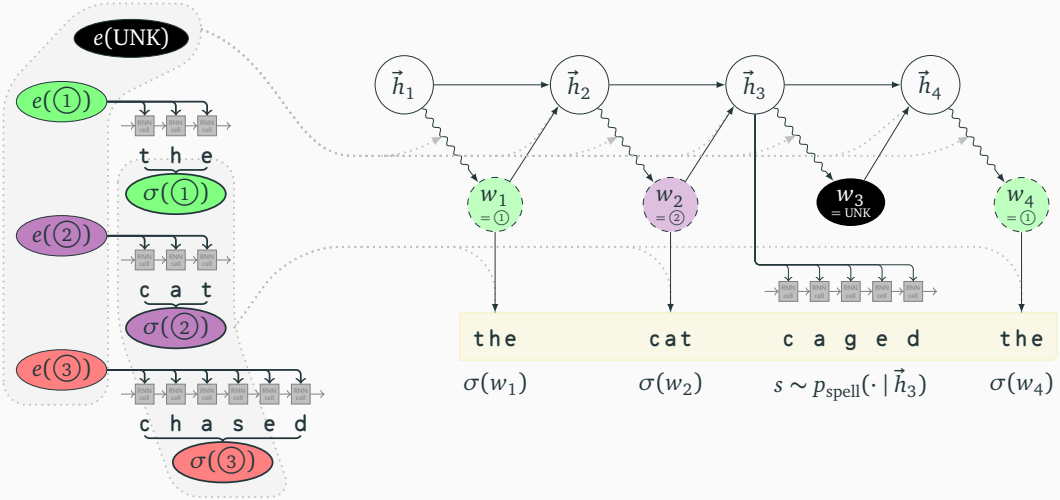
 regularize embeddings, don't construct them 

Recap: how does our model implement these ideas?

Embeddings and spellings are connected on the type level, ensuring conditional independence of usage and spelling while assigning positive probability to any pairing!



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⇒ A tunable "vocabulary size" hyperparameter decides what is temporary-UNK.

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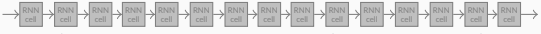	**3.89**	2.08	1.38	1.775
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...and plenty more baselines, ablations, datasets, and questions answered in the paper!

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Spell Once, Summon Anywhere: A Two-Level Open-Vocabulary Language Model

AAAI 2019 Technical Track

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sjmielke@jhu.edu, jason@cs.jhu.edu
Department of Computer Science, Johns Hopkins University, Baltimore, MD, USA