

DameSRL: A framework for deep multilingual semantic role labeling

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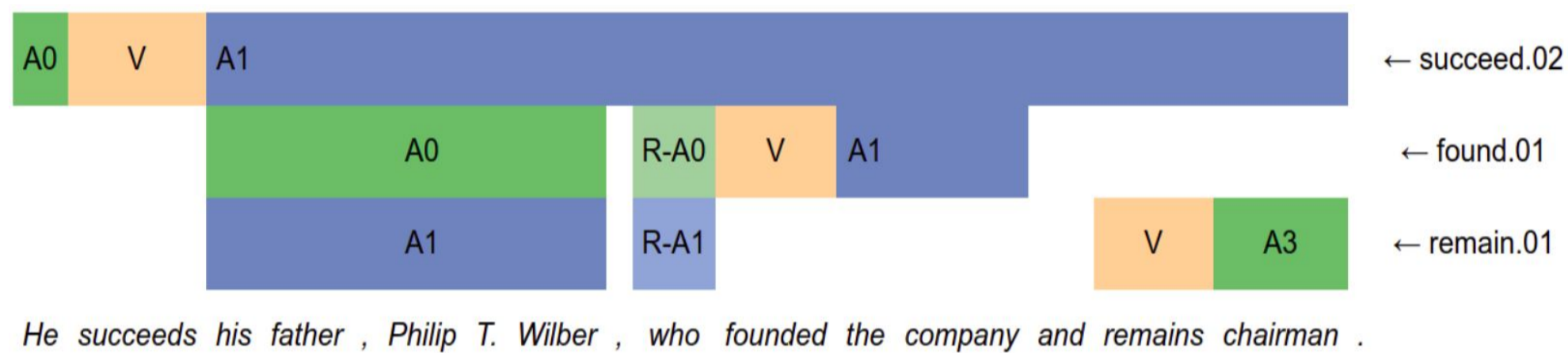
The Project

DameSRL is a flexible and **open source** framework for deep **semantic role labeling (SRL)** and aims to facilitate easy **exploration of model structures** for **multiple languages** with different characteristics.

Semantic Role Labeling

Semantic role labeling is a sentence-level semantic task aimed at identifying "Who did What to Whom, and How, When and Where?" (Palmer et al., 2010).

Example:



Web-Service

DameSRL comes with a **web-service** in which users can obtain **visualized predictions** for test sentences from out-of-the-box pre-trained models.

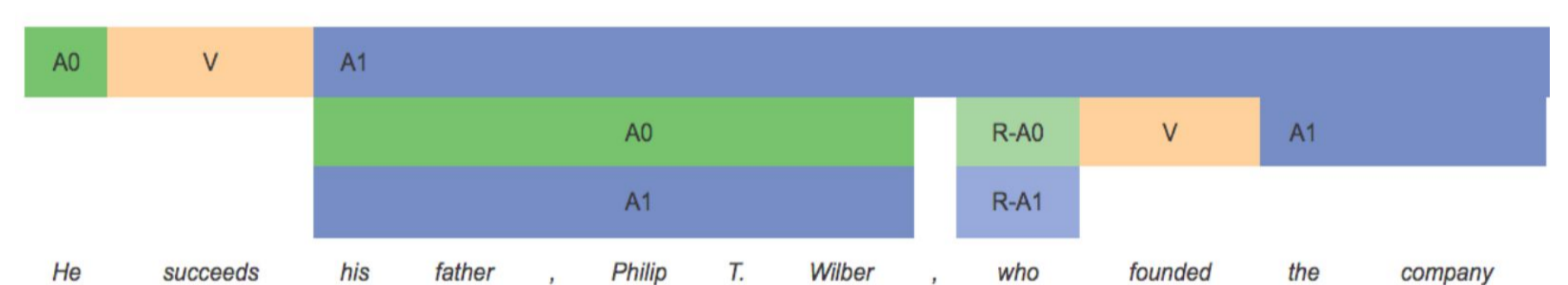
Model:

- EN-LSTM
- EN-CRF
- EN-Char
- EN-Att
- EN-CharAtt
- DE-CharAtt

He succeeds his father, Philip T. Wilber, who founded the company and remains chairman.

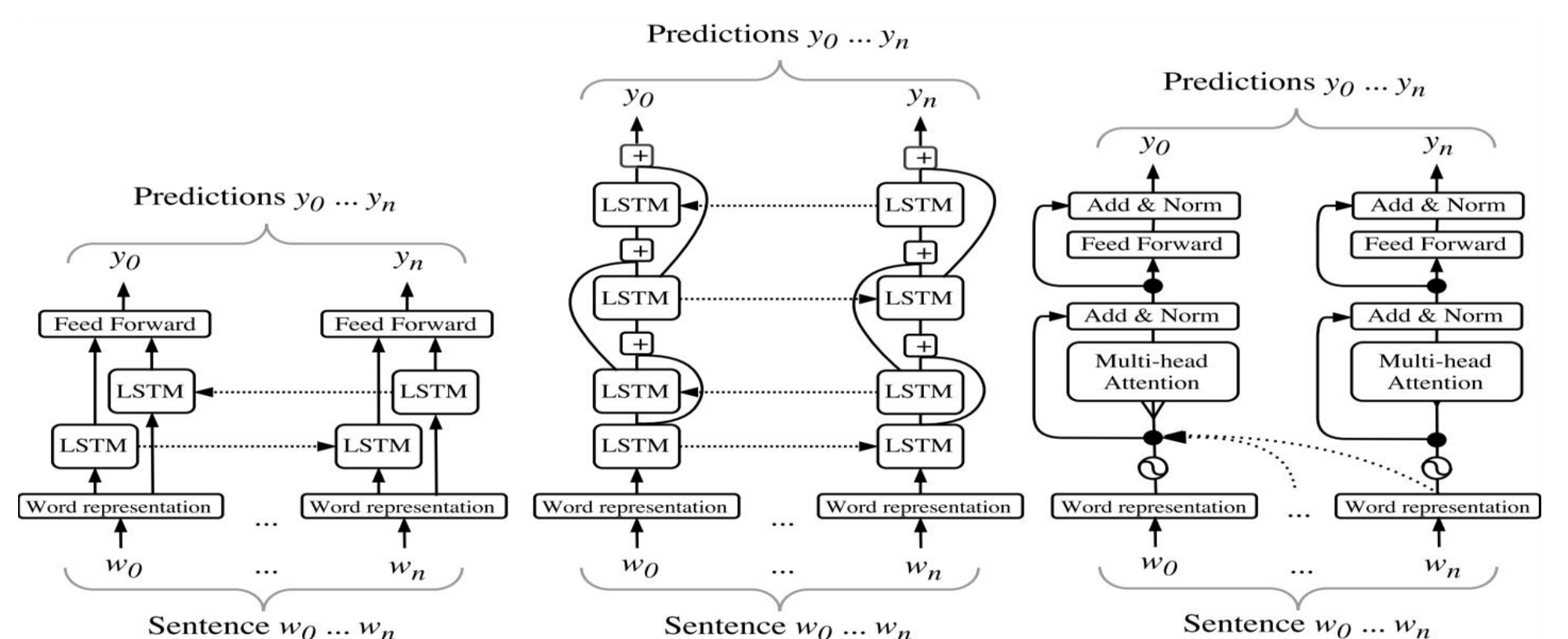
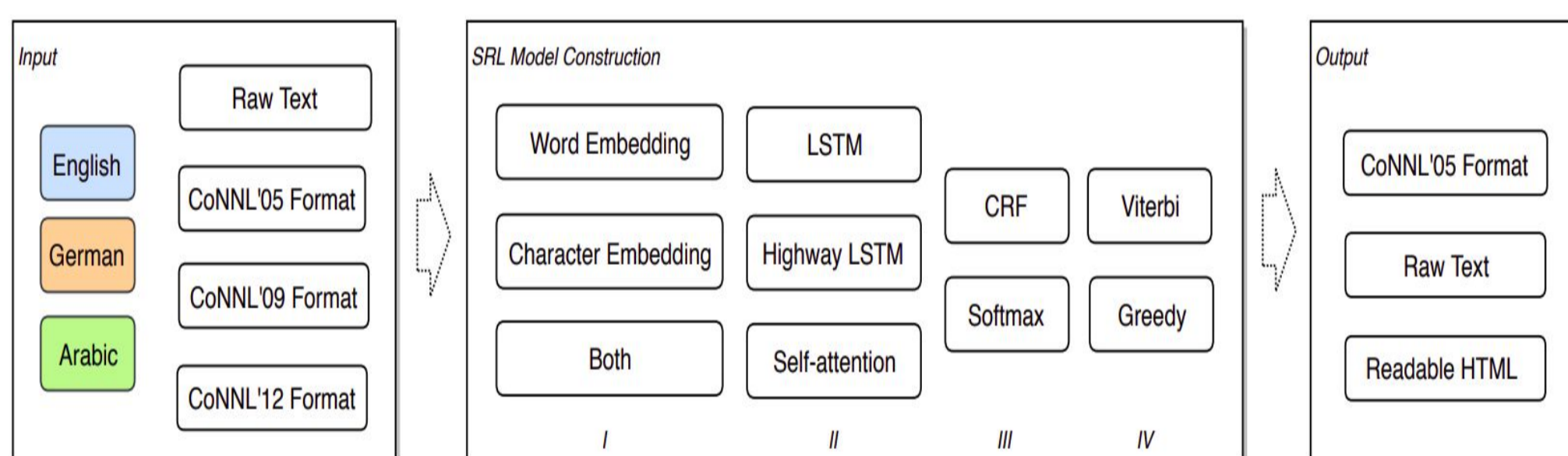
PREDICT SEMANTIC ROLES!

Output:



System Architecture to Facilitate Flexible Model Construction

The amount of data and language characteristics influence optimal model choices, hence flexible model construction is important.



Performance

DameSRL obtains **state-of-the-art results for English (CoNLL'05)**, and confirms that the amount of training data influences the optimal model choice.

Model	5% Data			Full Data		
	Dev	Ood	Eval	Dev	Ood	Eval
Lstm + CRF (Zhou and Xu, 2015)	-	-	-	79.6	69.4	82.8
HLstm (He et al., 2017)	-	-	-	81.6	72.1	83.1
Att (Tan et al., 2018)	-	-	-	83.1	74.1	84.8
HLstm-ours	62.8	54.3	64.9	82.0	71.9	83.1
Char	64.8	55.2	65.8	82.2	72.5	83.4
CRFm	65.8	57.5	67.0	81.7	70.9	83.5
Att-ours	57.4	51.7	59.6	83.2	73.7	84.8
CharAtt	58.2	52.4	60.7	83.5	73	84.9

It presents the **first deep end-to-end SRL results for Arabic (CoNLL'12)** and **German (CoNLL'09)**.

Model	Arabic		German		
	Dev	Eval	Dev	Ood	Eval
HLstm	45.7	46.3	67.1	56.4	67.6
Char	50.7	46.7	67.8	54.6	67.6
CRFm	49.2	49.9	67.3	54.6	65.1
Att	49.2	48.3	71.2	55.7	71.7
CharAtt	56.5	55.2	74.3	57.3	73.5

Implementation and Usage

DameSRL comes with **out-of-the-box pre-trained models** for:

- German
- English
- Arabic

New models can be trained easily on new data in any of the specified formats.

DameSRL models can **easily be extended** as they are implemented using

- Python 3.5
- Tensorflow (with GPU support)

Publication

Quynh Ngoc Thi Do, Artuur Leeuwenberg, Geert Heyman and Marie-Francine Moens. How to Use DameSRL: A Framework for Deep Multilingual Semantic Role Labeling. In Proceedings of the CLARIN Annual Conference, 2018.

Download

DameSRL is distributed under an Apache License 2.0 and can be downloaded at:

https://liir.cs.kuleuven.be/software_pages/damesrl.php