# Fine-grained Opinion Mining with an End-to-end Neural Model



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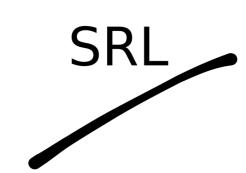
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#### Fine-grained opinion mining

Fine-grained opinion mining aims to detect explicit opinion expressions and their sentiment, identify targets (entities or propositions at which the sentiment is directed), holders (entities that express the opinion) and relations among extracted entities.

#### Multi-task learning with semantic role labeling (SRL)

## John likes that she enjoys being at the park.

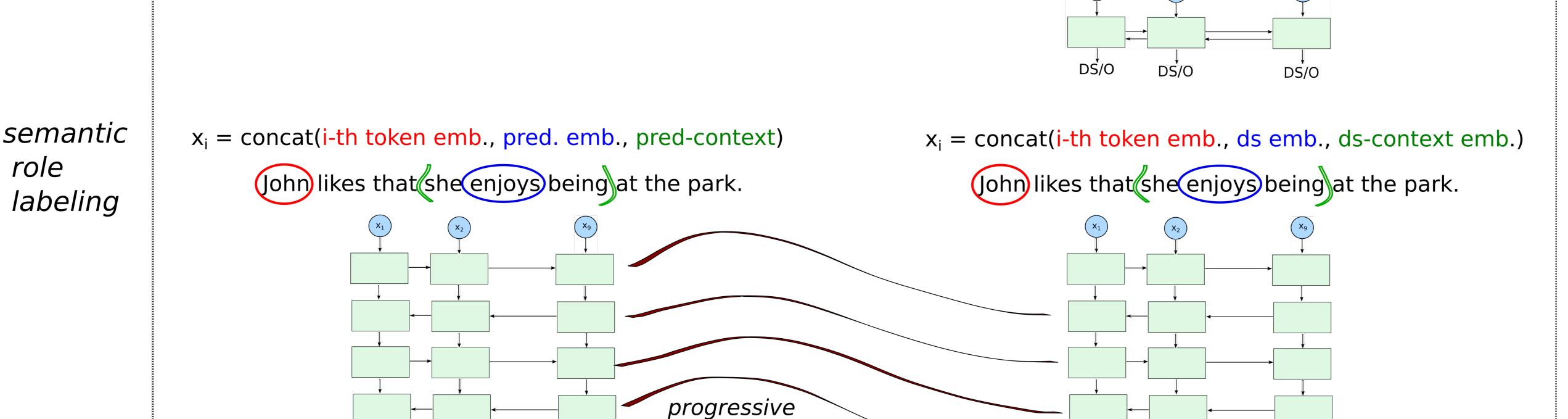


similar in nature, but **SRL** has much more data



likes: A0 V A1 A1 A1 A1 A1 A1 A1 enjoys: O O O A0 V A1 A1 A1 A1

likes: enjoys: O O O H DS T T T T



NN

extract direct subjectives (ds)

for every ds, extract holders & targets

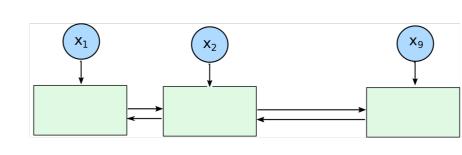
classification

target -dep. sentiment

 $x_i = concat(i-th token emb., target emb.)$ 

token embedding

John likes that she enjoys being at the park.



sentiment(John, she enjoys being at the park)=**POS** 

## **Future work**

role

- ► finish evaluation of the proposed model :)
- resolve noise in MPQA (benchmark dataset) He said that signing the protocol will have a positive
- sentiment inference

People are relieved that the reform will resolve bf event, positive

this problem. theme

outcome.

pos(people, resolve) & agent(resolve, reform)  $\Rightarrow$ pos(people,reform)

pos(people, resolve) & -effect(resolve) & theme(resolve,problem)  $\Rightarrow$  neg(people,problem)

propositional anaphora resolution

The cost got unacceptably high. People are relieved that the reform will resolve this problem.

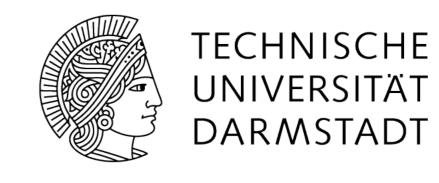
### **Preliminary results**

SRL ds ext. all roles ext. sentiment class. joint f1 @ ds f1 @ holder f1 @ target f1 @ sentiment



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