Evaluating Complement-Modifier Distinctions in a Semantically Annotated Corpus

Mark McConville and Myroslava O. Dzikovska

The Sixth Language Resources and Evaluation Conference (LREC'08)
Marrakech, 28 May 2008

School of informatics

The FrameNet corpus

Overshadowed by Grigorovich, Kokonin nonetheless apparently eclipsed him in power in recent months.

Kokonin	*eclipsed*	*him*	*in power*	*in recent months*
	Surpassing			
Item		Standard	Attribute	Time
NP	V	NP	PP	PP
Ext		Obj	Dep	Dep

Harvesting a verb lexicon

Kokonin	*eclipsed*	*him*	*in power*	*in recent months*
	Surpassing			
Item		Standard	Attribute	Time
NP	V	NP	PP	PP
Ext		Obj	Dep	Dep

$$\begin{bmatrix} \text{ORTH} & \langle \textit{eclipse} \rangle \\ \text{SYNCAT} & \texttt{V} \\ \text{SEMTYPE} & \texttt{Surpassing} \\ \text{ARGS} & \left\langle \begin{bmatrix} \text{GR} & \texttt{Ext} \\ \text{CAT} & \texttt{NP} \\ \text{ROLE} & \texttt{Item} \end{bmatrix}, \begin{bmatrix} \text{GR} & \texttt{Obj} \\ \text{CAT} & \texttt{NP} \\ \text{ROLE} & \texttt{Standard} \end{bmatrix}, \begin{bmatrix} \text{GR} & \texttt{Dep} \\ \text{CAT} & \texttt{PP} \\ \text{ROLE} & \texttt{Attribute} \end{bmatrix}, \begin{bmatrix} \text{GR} & \texttt{Dep} \\ \text{CAT} & \texttt{PP} \\ \text{ROLE} & \texttt{Time} \end{bmatrix} \right\rangle \end{bmatrix}$$

Removing non-Core arguments

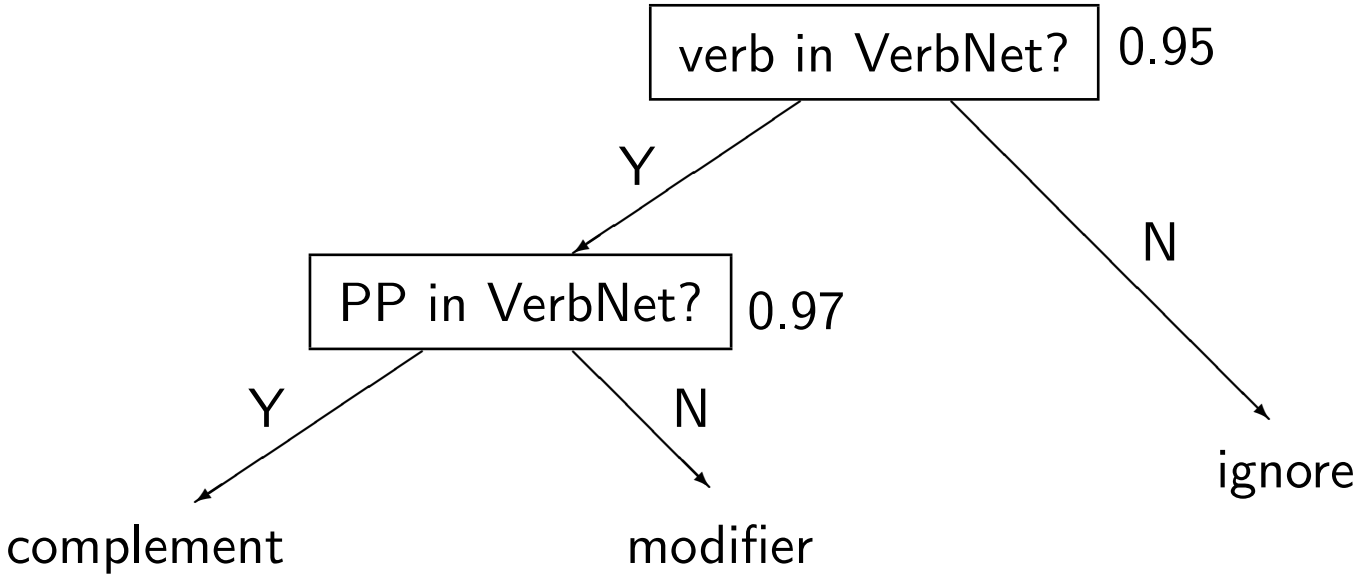
$$\begin{bmatrix} \text{ORTH} & \langle \textit{eclipse} \rangle \\ \text{SEMTYPE} & \texttt{Surpassing} \\ \text{ARGS} & \left\langle \begin{bmatrix} \text{GR} & \texttt{Ext} \\ \text{CAT} & \texttt{NP} \\ \text{ROLE} & \texttt{Item} \end{bmatrix}, \begin{bmatrix} \text{GR} & \texttt{Obj} \\ \text{CAT} & \texttt{NP} \\ \text{ROLE} & \texttt{Standard} \end{bmatrix}, \begin{bmatrix} \text{GR} & \texttt{Dep} \\ \text{CAT} & \texttt{PP} \\ \text{ROLE} & \texttt{Attribute} \end{bmatrix}, \begin{bmatrix} \text{GR} & \texttt{Dep} \\ \text{CAT} & \texttt{PP} \\ \text{ROLE} & \texttt{Time} \end{bmatrix} \right\rangle \end{bmatrix}$$

$$\begin{bmatrix} \text{ORTH} & \langle \textit{eclipse} \rangle \\ \text{SEMTYPE} & \texttt{Surpassing} \\ \text{ARGS} & \left\langle \begin{bmatrix} \text{GR} & \texttt{Ext} \\ \text{CAT} & \texttt{NP} \\ \text{ROLE} & \texttt{Item} \end{bmatrix}, \begin{bmatrix} \text{GR} & \texttt{Obj} \\ \text{CAT} & \texttt{NP} \\ \text{ROLE} & \texttt{Standard} \end{bmatrix}, \begin{bmatrix} \text{GR} & \texttt{Dep} \\ \text{CAT} & \texttt{PP} \\ \text{ROLE} & \texttt{Attribute} \end{bmatrix} \right\rangle \end{bmatrix}$$

Question

Does FrameNet's notion of semantic 'coreness' correlate with syntactic complementhood?

Method 1


verb in VerbNet?
0.95
Y
N
PP in VerbNet?
0.97
Y
N
ignore
complement
modifier

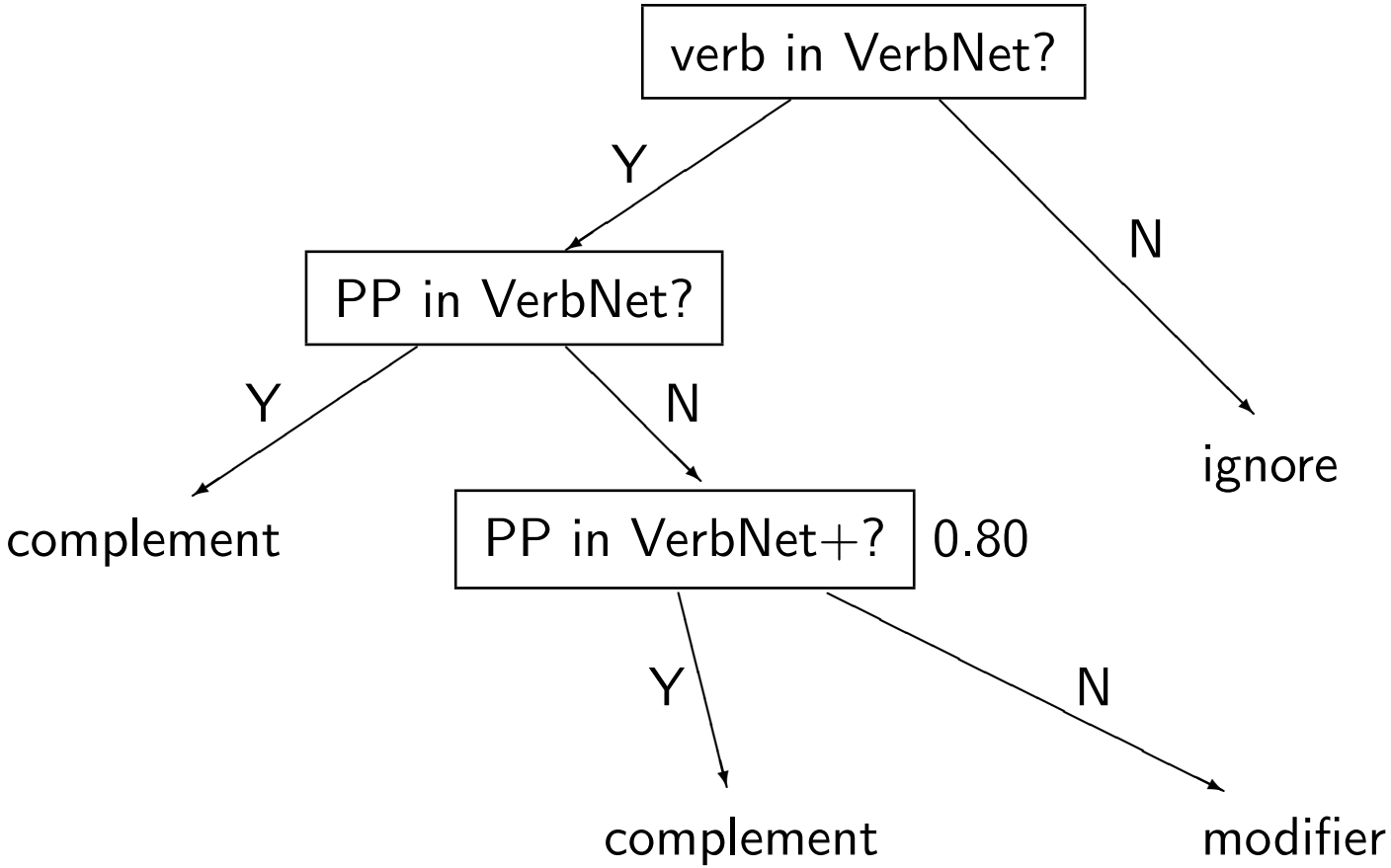
Results 1

	Core	non-Core
complements	199	37
non-complements	82	115

Agreement: 0.73

Kappa: 0.65

Method 2


verb in VerbNet?
Y
N
PP in VerbNet?
Y
N
ignore
complement
PP in VerbNet+?
0.80
Y
N
complement
modifier

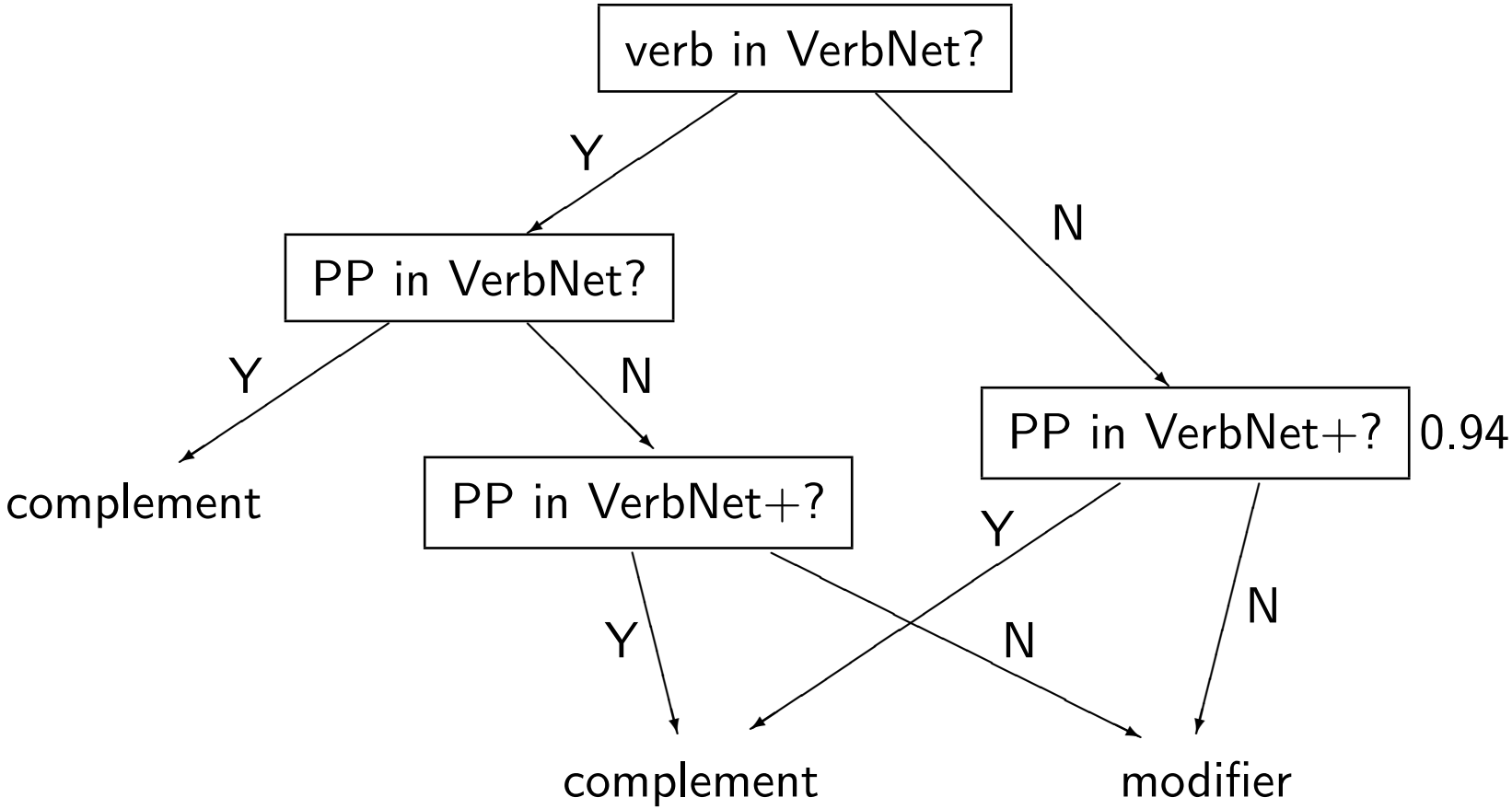
Results 2

	Core	non-Core
complements	258	49
non-complements	23	103

Agreement: 0.83

Kappa: 0.75

Method 3


verb in VerbNet?
Y
N
PP in VerbNet?
Y
N
PP in VerbNet+?
0.94
complement
PP in VerbNet+?
Y
N
Y
N
complement
modifier

Results 3

	Core	non-Core
complements	395	59
non-complements	37	145

Agreement: 0.85

Kappa: 0.65

Core dependents which are not complements

She unfastened [*the waistband*]$_{\texttt{Fastener}}$ [*of her skirt*]$_{\texttt{Containing\_object}}$

Conclusions

If we assume that `Core` = complement:

- 13% of PP complements will be lost
- 9% of PPs left will be non-complements