Combining Abstractness and Language-specific Theoretical Indicators for Detecting Non-Literal Usage of Estonian Particle Verbs

Eleri Aedmaa[1], Maximilian Köper[2], Sabine Schulte im Walde[2]

[1] Institute of Estonian and General Linguistics, University of Tartu, Estonia
[2] Institut für Maschinelle Sprachverarbeitung, Universität Stuttgart, Germany
eleri.aedmaa@ut.ee,{maximilian.koeper,schulte}@ims.uni-stuttgart.de

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GOALS

- Create two **datasets** for a low-resource Estonian.
- Build a random-forest **classifier** to automatically predict literal vs. non-literal language usage of particle verbs.
- Ascertain **the importance of language-specific features** when combined with language-independent features of abstractness.

DATASETS

- Dataset of literal and non-literal language usage for Estonian PVs: 210 PVs across 34 particles, 1490 sentences.
- Automatically created abstractness ratings for 243,675 Estonian lemmas.
- Available at `http://github.com/eleriaedmaa/`

CLASSIFICATION RESULTS

	feature type	acc	F_1 n-lit	F_1 lit
	majority baseline	74.0%	85.0	0.00
1	particle (p)	73.6%	84.4	13.6
2	base verb (v)	81.2%	87.9	58.0
3	unigrams, f>5 (uni)	82.3%	89.0	54.6
4	average rating of words (abs)	68.1%	79.8	24.5
5	average rating of nouns (abs)	68.5%	79.7	30.1
6	rating of the PV subject (abs)	72.3%	83.1	23.7
7	rating of the PV object (abs)	73.0%	83.5	25.2
8	subject case (case)	74.0%	85.0	0.00
9	object case (case)	74.0%	85.0	0.00
10	subject animacy (animacy)	74.0%	85.0	0.00
11	object animacy (animacy)	74.0%	85.0	0.00
12	case government (govern)	73.8%	84.6	10.1
	p+v, 1–2	85.2%	90.3	68.7
	v+uni, 2–3	84.2%	89.6	66.4
	p+v+uni, 1–3	85.0%	90.1	68.5
	p+v+abs, 1–2, 4–6	86.3%	90.9	72.3
	p+v+abs, 1–2, 4–7	86.0%	90.7	71.3
	p+v+abs, 1–2, 5–6	86.0%	90.7	71.9
	p+v+case, 1–2, 8	85.3%	90.4	68.9
	p+v+case, 1–2, 8–9	84.6%	89.7	69.3
	p+v+animacy, 1–2, 10–11	86.2%	90.8	72.3
	p+v+govern, 1–2, 12	86.2%	90.9	71.6
	p+v+abs+lang, 1–2, 4–6, 10–12	87.3%	91.6	73.8
	p+v+abs+lang, 1–2, 4–12	87.5%	91.8	73.8
	p+v+abs+lang, 1–2, 5–6, 8, 10, 12	**87.9%**	**92.0**	**75.0**

CONCLUSION

Language-specific features **subject case**, **subject animacy** and **case government** combined with **abstractness ratings** as well as **verb** and **particle** information classify literal vs. non-literal usage of PVs with accuracy 87.9%.

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ESTONIAN PARTICLE VERB

Estonian particle verb = an adverbial particle + base verb (e.g., *alla andma* 'to give up')

Challenging because:

- their components do not always appear adjacent to each other
- the particles are homonymous with adpositions
- the same PV can be used in literal (1) vs. non-literal (2) language

(1) Ta **astu-s** kaks sammu **tagasi**.
he step-PST.3SG two step.PRT back
'He took two steps back.'

(2) Ta **astu-s** ameti-st **tagasi**.
he step-PST.3SG job-ELA back
'He resigned from his job.'

FEATURES

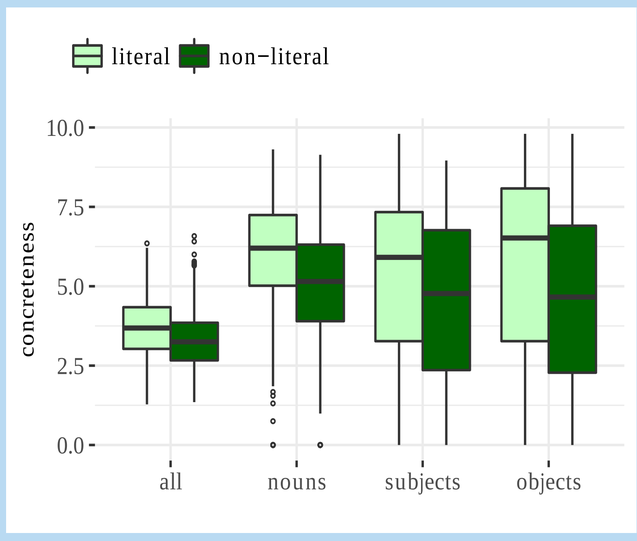
1 **particle** – particle of the particle verb

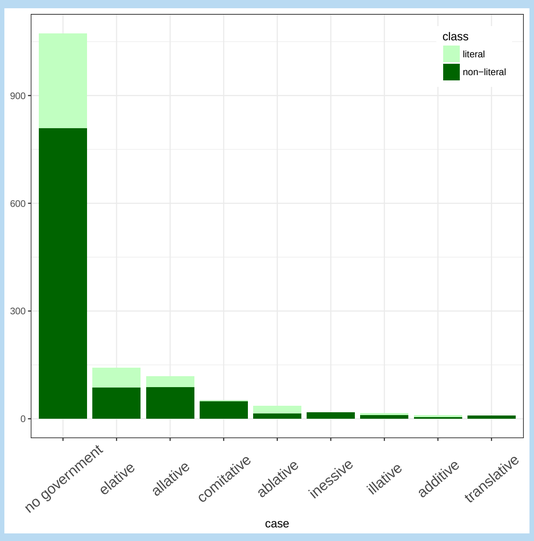
2 **verb** – verb of the particle verb

3 **unigrams** – lemmas of content words that occur in the same sentences with target PVs

4–7 **abstractness features** – average rating of all words in a sentence, average rating of all nouns in a sentence, rating of the PV subject, rating of the PV object

12 **case government** – case of the argument of the particle verb (excluding subject and object); value = one of the 14 cases





8–9 **case features** – case of the PV subject (nominative or partitive) and PV object (nominative, genitive or partitive)

10–11 **animacy features** – whether the subject and object are alive or not