Identifying variants of multiword expressions

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Verbal Multiword Expressions (VMWEs)

- MWEs = word combinations with unpredictable behavior

  e.g. semantics: ***to have egg on one's face*** = 'to seem stupid' ≠

- VMWE Challenges
  - Scale-wise variability (≠ regular phrases): (1)(2) vs. (3) ❗ auto. identification
  - Ambiguity: (1) ≠ (4)
  - Discontinuity: (1) ≠ (2) ❗ sequence labeling

✓(1) *I* ***broke***$_{\text{pret}}$ *her* ***heart***$_{\text{sing}}$ *when I left*
✓(2) *Lives lost and* ***hearts***$_{\text{plur}}$ ***broken***$_{\text{past}}$
✗(3) **I break my heart*
✗(4) *I broke her heart in chocolate when I stepped on it*

Each VMWE has a Variability profile

(literal reading)

⇒ VMWE identification required by NLP applications

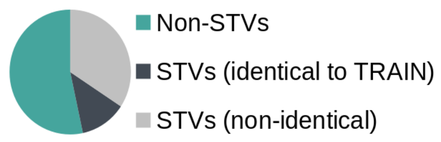
PARSEME corpus

❗ Rich verbal inflection in French
- 👍 manually annotated VMWEs
- 👍 syntactic dependencies
- 👍 lemmas, POS, morph. features
- 👍 UD v2 tagsets

- VERB-(DET)-NOUN VMWEs
  - – Light Verb Constructions
    jouer rôle *'play role'*
  - – Idioms
    fermer *la* ***porte*** *'close the door'*
- TRAIN: 854 VMWEs (2098 occ.)
- TEST: 177 VMWEs (283 occ.)

Focus on variant identification in corpus

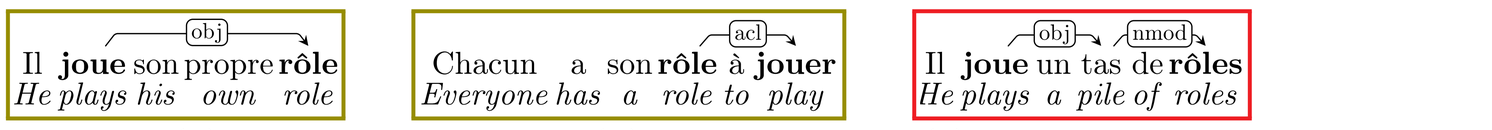
- Goal = identification of known VMWEs whatever their form
  Why ? Variants are pervasive e.g. *Seen-in-train variants* (STVs)



- STV definition = same meaning but possibly different surface form e.g. ***break heart*** in (1)(2)
- **Hypothesis** = any VMWE_x shares similarities with VMWE_y already seen in corpus
  - $\text{VMWE}_x = \text{VMWE}_y \Rightarrow$ VMWE-specific properties
  - $\text{VMWE}_x \neq \text{VMWE}_y \Rightarrow$ VMWE-generic properties, e.g. same restricted inflection in *I* ***dance on*** *my/your* ***grave*** as in (3)

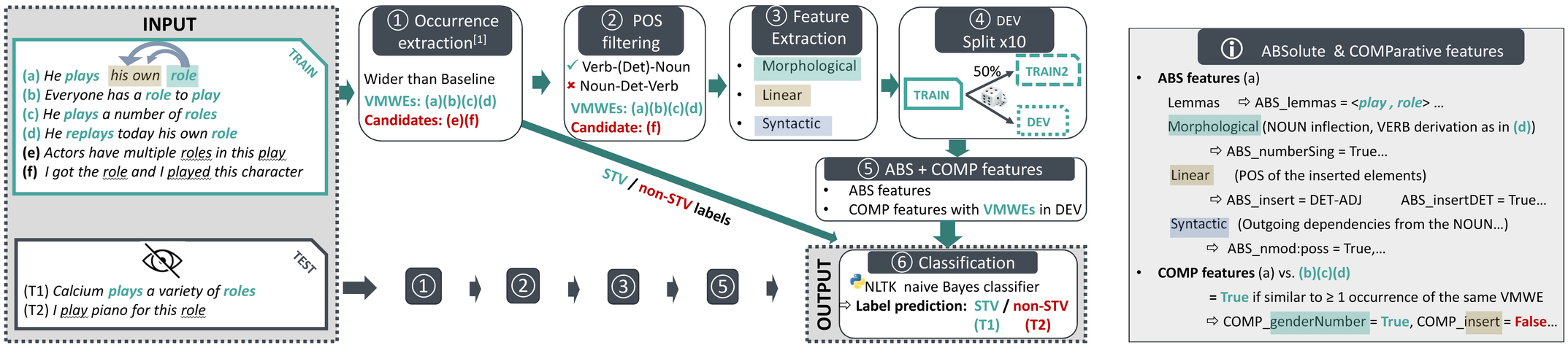
Baseline ⇒ same lemmas + syntactic connection

- Strong baseline: F1 = 0.88

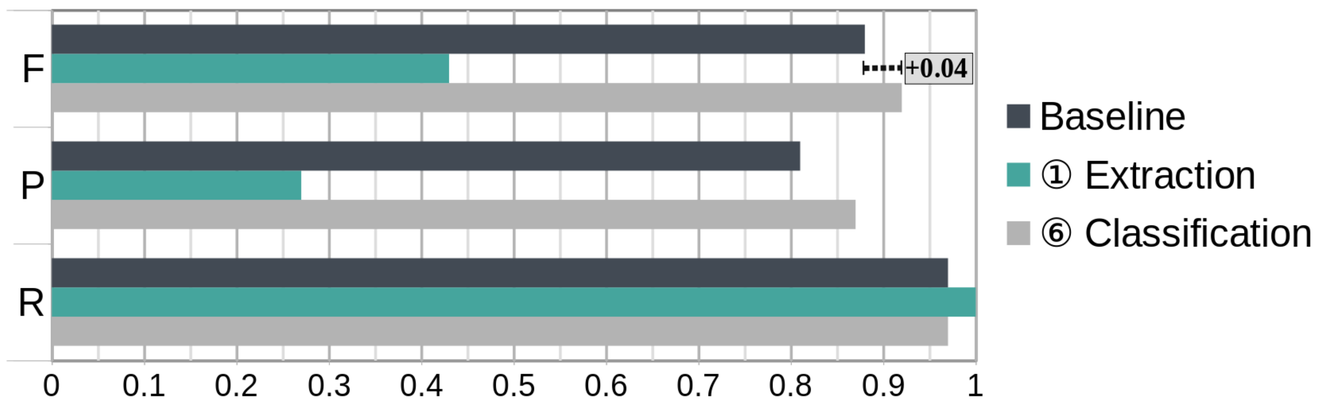


Our method ⇒ classification based on the Morpho-syntactic variability profiles

- Same lemmas (↑R but P↓) + ABSolute/COMParative VMWE features ⇒ (1)(2) gathered + (3)(4) discarded



Extraction & Classification results vs. Baseline



Discriminative features

new Linear features more discriminative than morphological features

- COMP features for **STV** prediction
  e.g. same insertions
- ABS feat. for **non-STV** prediction
  e.g. insertion of VERB, PUNCT...

Conclusions & Perspectives

- 👍 F1 = 0.92 > Baseline
- 👍 Good reproducibility $\sigma_{F1} = 0.01$ (10 samples)

⚠ Larger corpora & not only 🇫🇷 Verb-(Det)-Noun ⇒ Workshop Poster, Aug 25[2]
⚠ Other features: orthographic similarity, lexical similarity

References,acknowledgements

[1] Savary and Cordeiro, TLT 2018
[2] Pasquer *et al.*, COLING Workshop 2018

ANR French PARSEME-FR grant
Thanks to S.Cordeiro for the extraction script