# Organizing and Improving a Database of French Word Formation Using Formal Concept Analysis

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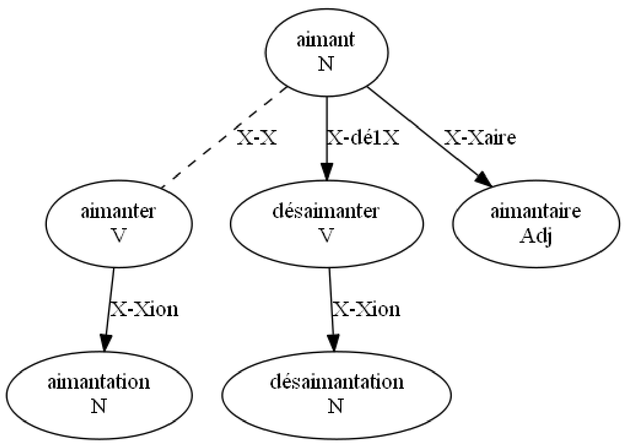
## 1. Introduction

*Démonette*: a derivational database that systematically describes the **derivational properties** of a fragment of the French lexicon.

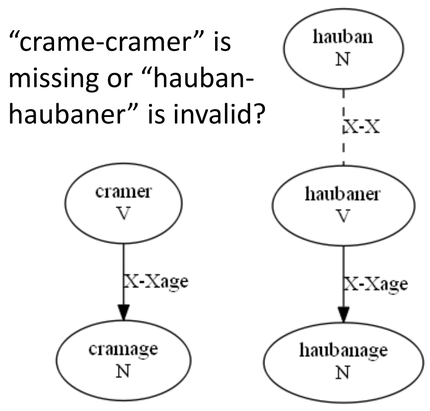



The derivational graph of family *aimant*

Research questions:

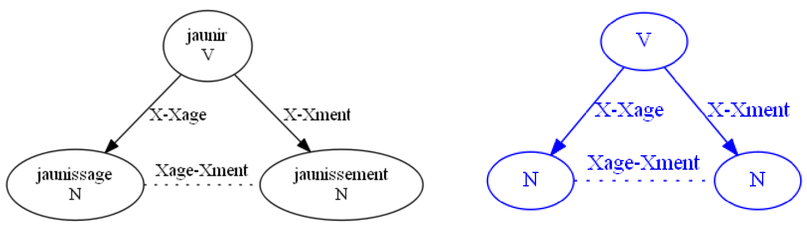
1. How to systematically represent the relations among 13K families
2. How to detect families having **anomalies**, i.e. having either **missing** or **incorrect** derivations.

"crame-cramer" is missing or "hauban-haubaner" is invalid?



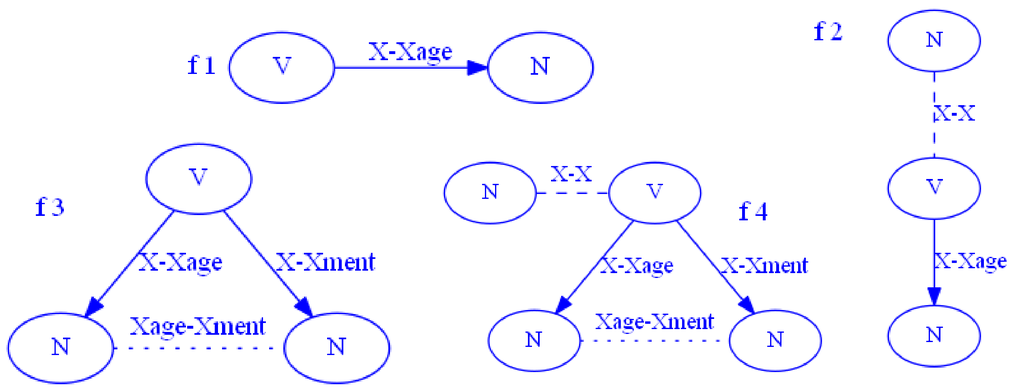

## 2. Fingerprint

Fingerprint of a family is the family's graph without lexemes.



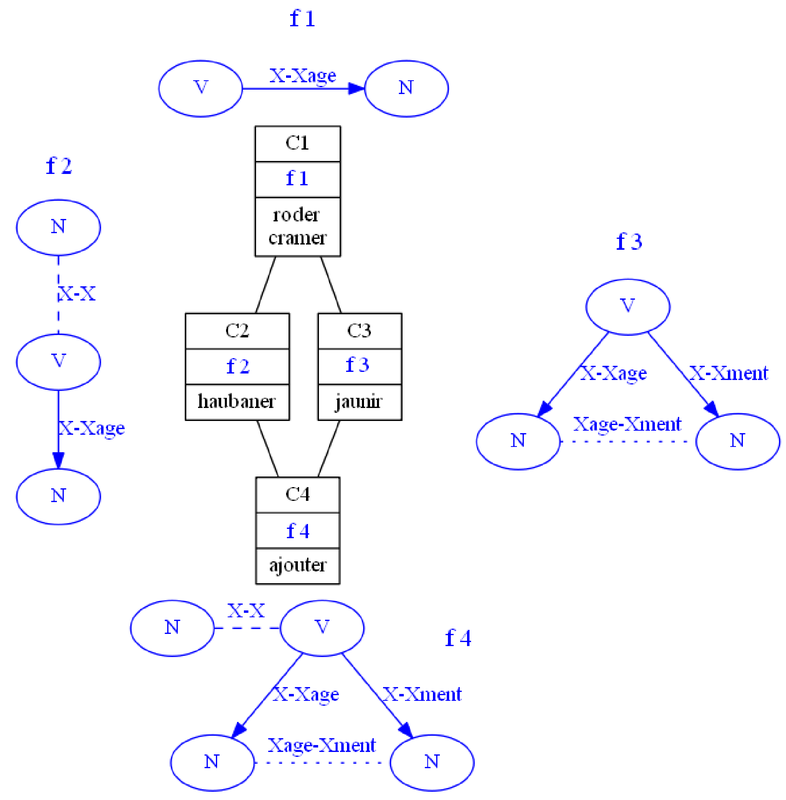

A fingerprint can correspond to multiple families.
Among 13K families, there are 4K unique fingerprints.

## 3. Formal context



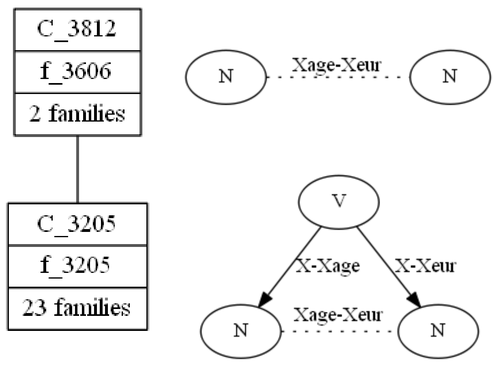

| Family | f 1 | f 2 | f 3 | f 4 |
|---|---|---|---|---|
| *roder* | × | | | |
| *cramer* | × | | | |
| *haubaner* | × | × | | |
| *jaunir* | × | | × | |
| *ajout* | × | × | × | × |

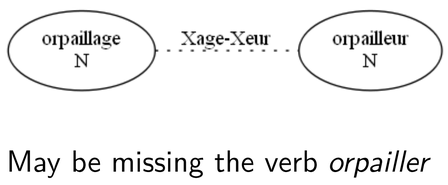
## 4. AOC-poset of derivational families



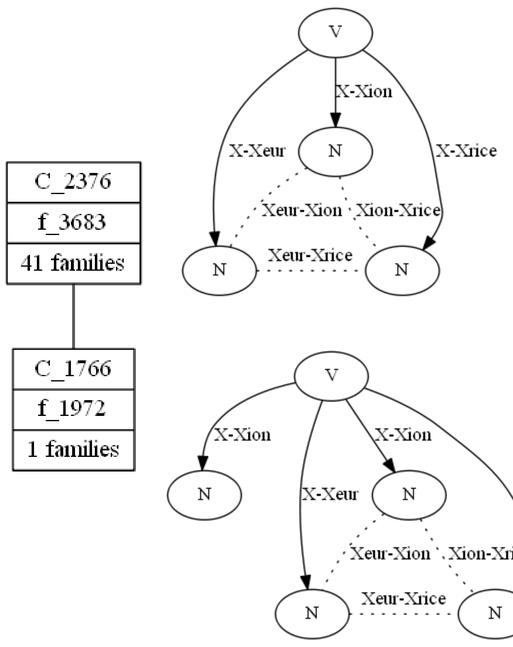

- Shows how a fingerprint can *develop* to other fingerprints
- Shows how a fingerprint is a *combination* of other fingerprints

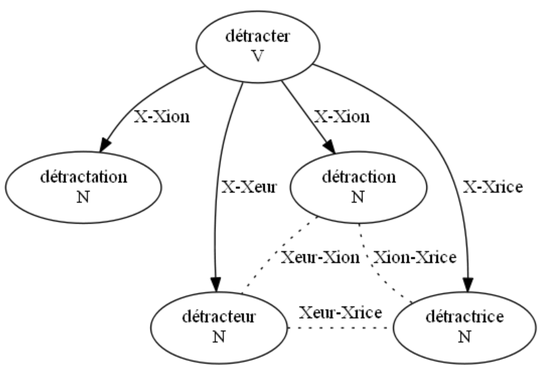
## 5. Anomaly detection using AOC-poset




May be missing the verb *orpailler*




*détracter-détractation* may be incorrect

## 6. References

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3. Namer, F. et al. (2019). Demonette2 - Une base de donnees dérivationnelle du français à grande échelle : premiers résultats. In *Actes de la Conference sur le Traitement Automatique des Langues Naturelles (TALN) PFIA 2019*.

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