

# Some linguistic examples of Feature Structures

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Listing 1: Example from a Meta Grammar

---

```
<fs>
  <f name="lfg">
    <fs>
      <f name="mode">
        <not>
          <vAlt>
            <sym value="infinitive"/>
            <sym value="participle"/>
          </vAlt>
        </not>
      </f>
    </fs>
  </f>
</fs>
```

---

$$\left[ \text{lfg} \left[ \text{mode} \neg (\text{infinitive} | \text{participle}) \right] \right]$$

Figure 1: Example from a Meta Grammar (AVM version of Listing 1)

Listing 2: Fragment from a TAG grammar

```

<fs>
  <f name="lfg">
    <var name="19">
      <fs type="lfg">
        <f name="number">
          <var name="15" />
        </f>
        <f name="object">
          <var name="28" />
        </f>
        <f name="person">
          <var name="14" />
        </f>
        <f name="subject">
          <var name="16" />
        </f>
        <f name="wh">
          <not>
            <vAlt>
              <sym value="object" />
              <sym value="subject" />
            </vAlt>
          </not>
        </f>
      </fs>
    </var>
  </f>
</fs>

```

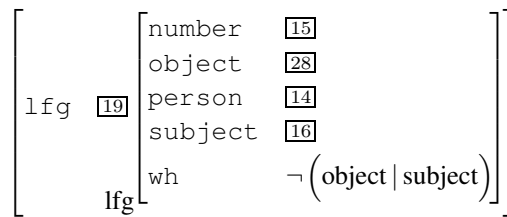


Figure 2: Fragment from a TAG grammar (AVM version of Listing 2)

Listing 3: Fragment of an atomic value library (for French verb modes)

```

<vLib type="mode">
  <sym value="indicatif" id="mode_ind" />
  <sym value="subjonctif" id="mode_subj" />
  <sym value="imperatif" id="mode_imp" />
  <sym value="conditionnal" id="mode_cond" />
  <sym value="infinitif" id="mode_inf" />
  <sym value="participe_passe" id="mode_ppart" />
</vLib>

```

Listing 4: Fragment of a feature library (For French verb modes)

```

<fLib name="multext">
  <f fVal="mode_ind" name="mode" id="mode@ind"/>
  <f fVal="mode_subj" name="mode" id="mode@subj"/>
  <f fVal="mode_imp" name="mode" id="mode@imp"/>
  <f fVal="mode_cond" name="mode" id="mode@cond"/>
  <f fVal="mode_inf" name="mode" id="mode@inf"/>
  <f fVal="mode_ppart" name="mode" id="mode@ppart"/>
</fLib>

```

---

Listing 5: Lexicon entry

---

```

<fs>
  <f name="cat">
    <sym value="adj"/>
  </f>
  <f name="adj_type">
    <sym value="qual"/>
  </f>
  <f name="gender">
    <sym value="fem"/>
  </f>
  <f name="num">
    <sym value="sing"/>
  </f>
</fs>

```

cat	adj
adj_type	qual
gender	fem
num	sing

Figure 3: Lexicon entry (AVM version of Listing 5)

---

```

<fs feats="cat@adj_adj_type@qual_gender@fem_num@sing" tokens="t0"/>

```

---

Listing 6: Morpho-Syntactic information for French form "mange" (to eat)

---

```

<fs>
  <f name="cat">
    <sym value="verb"/>
  </f>
  <f name="aux">
    <sym value="avoir"/>
  </f>
  <f name="mode">
    <sym value="indicatif"/>
  </f>
  <f name="tense">
    <sym value="present"/>
  </f>
  <f name="pers">
    <vAlt>

```

```

    <sym value="1" />
    <sym value="3" />
  </vAlt>
</f>
<f name="num">
  <sym value="sing" />
</f>
</fs>

```

---

cat	verb
aux	avoir
mode	indicatif
tense	present
pers	1 3
num	sing

Figure 4: Morpho-Syntactic information for French form "mange" (to eat) (AVM version of Listing 6)

Listing 7: alternate compact form

---

```
<fs feats="cat@verb_aux@avoir_mode@ind_tense@pres_pers@1|3_num@sing" />
```

---

Listing 8: Use of collections for contracted words

---

```

<fs>
  <f name="lex">
    <sym value="auquel" />
  </f>
  <f name="maf">
    <collection org="list">
      <fs>
        <f name="cat">
          <sym value="prep" />
        </f>
      </fs>
      <fs>
        <f name="cat">
          <sym value="pronoun" />
        </f>
        <f name="kind">
          <sym value="rel" />
        </f>
        <f name="num">
          <sym value="pl" />
        </f>
        <f name="gender">
          <sym value="masc" />
        </f>
      </fs>
    </collection>
  </f>
</fs>

```

---

$$\left[ \begin{array}{l} \text{lex} \quad \text{auquel} \\ \text{maf} \left\langle \left[ \text{cat} \quad \text{prep} \right], \left[ \begin{array}{ll} \text{cat} & \text{pronoun} \\ \text{kind} & \text{rel} \\ \text{num} & \text{pl} \\ \text{gender} & \text{masc} \end{array} \right] \right\rangle \end{array} \right]$$

Figure 5: Use of collections for contracted words (AVM version of Listing 8)

Listing 9: Reentrecy

---

```

<fs>
  <f name="spec">
    <fs>
      <f name="accord" n="@1">
        <fs>
          <f name="num">
            <sym value="sing" />
          </f>
        </fs>
      </f>
      <f name="pos">
        <sym value="det" />
      </f>
    </fs>
  </f>
  <f name="head">
    <fs>
      <f name="accord" n="@1" />
      <f name="pos">
        <sym value="n" />
      </f>
    </fs>
  </f>
</fs>

```

---


$$\left[ \begin{array}{l} \text{spec} \left[ \begin{array}{ll} \text{accord} & \text{@1} \left[ \text{num} \quad \text{sing} \right] \\ \text{pos} & \text{det} \end{array} \right] \\ \text{head} \left[ \begin{array}{ll} \text{accord} & \text{@1} \\ \text{pos} & \text{n} \end{array} \right] \end{array} \right]$$

Figure 6: Reentrecy (AVM version of Listing 9)

Listing 10: Reentrecy

---

```

<fs>
  <f name="spec">
    <fs>
      <f name="accord" n="@1">
        <fs>

```

```

        <f name="num">
            <sym value="sing" />
        </f>
    </fs>
</f>
<f name="pos">
    <sym value="det" />
</f>
</fs>
</f>
<f name="head">
    <fs>
        <f name="accord" n="@1">
            <fs>
                <f name="gender">
                    <sym value="fem" />
                </f>
            </fs>
        </f>
        <f name="pos">
            <sym value="n" />
        </f>
    </fs>
</f>
</fs>

```

---

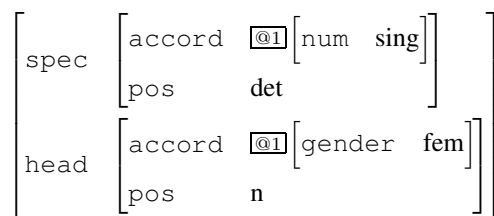


Figure 7: Reentrecy (AVM version of Listing 10)

---

Listing 11: Reentrecy

---

```

<fs>
    <f name="spec">
        <fs>
            <f name="accord" n="@1">
                <any />
            </f>
            <f name="pos">
                <sym value="det" />
            </f>
        </fs>
    </f>
    <f name="head">
        <fs>
            <f name="accord" n="@1" />
            <f name="pos">

```

```

    <sym value="n" />
  </f>
</fs>
</f>
</fs>

```

---


$$\left[ \begin{array}{l} \text{spec} \\ \text{head} \end{array} \left[ \begin{array}{ll} \text{accord} & \boxed{\text{@1}} \\ \text{pos} & \text{det} \end{array} \right] \right]$$

$$\left[ \begin{array}{ll} \text{accord} & \boxed{\text{@1}} \\ \text{pos} & \text{n} \end{array} \right]$$

Figure 8: Reentrecy (AVM version of Listing 11)

Listing 12: Lexicon entry for French verb 'dit' (to say)

---

```

<fs type="lfg">
  <f name="pred">
    <fs>
      <f name="lemma">dire</f>
      <f name="args">
        <fs type="ht">
          <f name="subject">
            <plus />
          </f>
          <f name="aobject">
            <plus />
          </f>
          <f name="object">
            <plus />
          </f>
          <f name="scomp">
            <plus />
          </f>
        </fs>
      </f>
    </fs>
  </f>
</fs>
<f name="v-form">
  <sym value="tense" />
</f>
<f name="tense">
  <sym value="present" />
</f>
<f name="mode">
  <sym value="indicative" />
</f>
<f name="subject">
  <fs>
    <f name="person">
      <sym value="3" />
    </f>
  </fs>

```

```

    </fs>
  </f>
</fs>

```

---

pred	lemma	dire									
v-form	args	<table style="border-collapse: collapse; margin-left: 20px;"> <tr> <td style="border-left: 1px solid black; border-right: 1px solid black; padding: 2px 5px;">subject</td> <td style="padding: 2px 5px;">+</td> </tr> <tr> <td style="border-left: 1px solid black; border-right: 1px solid black; padding: 2px 5px;">aobject</td> <td style="padding: 2px 5px;">+</td> </tr> <tr> <td style="border-left: 1px solid black; border-right: 1px solid black; padding: 2px 5px;">object</td> <td style="padding: 2px 5px;">+</td> </tr> <tr> <td style="border-left: 1px solid black; border-right: 1px solid black; padding: 2px 5px;">scomp</td> <td style="padding: 2px 5px;">+</td> </tr> </table>	subject	+	aobject	+	object	+	scomp	+	
subject	+										
aobject	+										
object	+										
scomp	+										
tense	tense	present									
mode	mode	indicative									
subject	subject	[person 3]									

lfg

Figure 9: Lexicon entry for French verb 'dit' (to say) (AVM version of Listing 12)

Listing 13: Simple alternative

---

```

<fs>
  <f name="number">
    <sym value="sing" />
  </f>
  <f name="pers">
    <sym value="3" />
  </f>
  <f name="mode">
    <vAlt>
      <sym value="ind" />
      <sym value="subj" />
    </vAlt>
  </f>
  <f name="tense">
    <sym value="present" />
  </f>
  <f name="transitive">
    <plus />
  </f>
  <f name="passive">
    <minus />
  </f>
</fs>

```

---

Listing 14: a complex HSPG-like fragment of lexicon entry

---

```

<fs>
  <f name="phon">
    <sym value="rouge" />
  </f>
  <f name="synsem">
    <fs type="synsem">

```



number	sing
pers	3
mode	ind   subj
tense	present
transitive	+
passive	-

Figure 10: Simple alternative (AVM version of Listing 13)

```

<f name="loc">
  <fs>
    <f name="cat">
      <fs>
        <f name="head">
          <fs>
            <f name="maj">
              <sym value="adj" />
            </f>
            <f name="prd">
              <minus />
            </f>
            <f name="mod">
              <fs>
                <f name="n">
                  <fs>
                    <f name="index">
                      <var name="@1" />
                    </f>
                    <f name="restr">
                      <var name="@2" />
                    </f>
                  </fs>
                </f>
              </fs>
            </f>
          </fs>
        </f>
      </fs>
    </f>
    <f name="valency" />
  </fs>
</f>
<f name="cont">
  <fs>
    <f name="index">
      <var name="@1">
        <fs>
          <f name="number">
            <sym value="sing" />
          </f>
        </fs>
      </var>
    </f>
  </fs>
  <f name="restr">

```

```

    <concat>
      <collection org="set">
        <fs>
          <f name="quants"/>
          <f name="nucleus">
            <fs type="red">
              <f name="arg">
                <var name="@1"/>
              </f>
            </fs>
          </f>
        </fs>
      </collection>
      <var name="@2"/>
    </concat>
  </f>
</fs>
</fs>
</fs>
</fs>
</fs>
</fs>
</fs>
</fs>
</fs>
</fs>

```

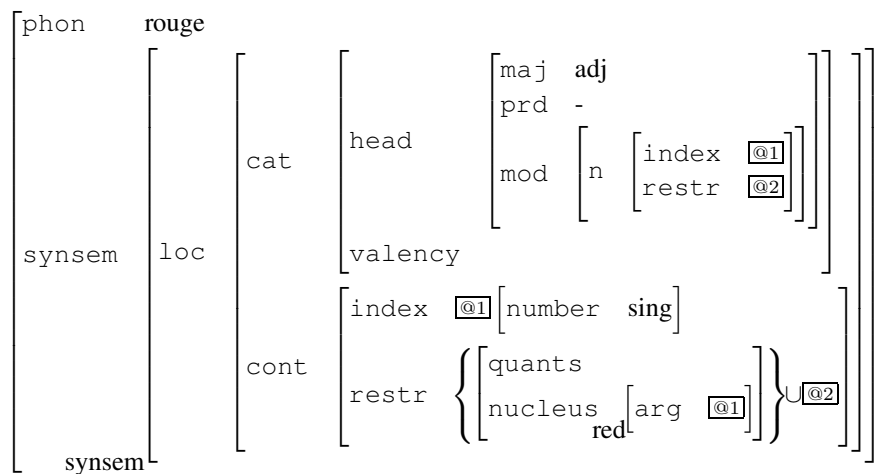


Figure 11: a complex HSPG-like fragment of lexicon entry (AVM version of Listing 14)

Listing 15: Collections and concatenation (not covered by FSR)

```

<fs>
  <f name="index">
    <var name="@1">
      <fs>
        <f name="number">
          <sym value="sing"/>
        </f>
      </fs>
    </var>
  </f>
</fs>

```

```

</f>
<f name="restr">
  <concat>
    <collection org="set">
      <fs>
        <f name="quants"/>
        <f name="nucleus">
          <fs type="red">
            <f name="arg">
              <var name="@1"/>
            </f>
          </fs>
        </f>
      </fs>
    </collection>
    <var name="@2"/>
  </concat>
</f>
</fs>

```

---


$$\left[ \begin{array}{l} \text{index } \boxed{\text{@1}} \left[ \text{number } \text{sing} \right] \\ \text{restr } \left\{ \left[ \begin{array}{l} \text{quants} \\ \text{nucleus } \left[ \text{arg } \boxed{\text{@1}} \right] \right] \right\} \cup \boxed{\text{@2}} \end{array} \right]$$

Figure 12: Collections and concatenation (not covered by FSR) (AVM version of Listing 15)