Applying Frame Semantics to Soccer Language: from a monolingual to a multilingual resource

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Kicktionary_br
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Academic Context:

• Team developing the soccer resource (UNISINOS):
  – graduate and undergraduate students
  – Professors and researchers

• Partnerships:
  – Applied Computing Department (UNISINOS)
  – University of Juiz de Fora (Tourism resource)

• Founding:
  – FAPERGS and CNPq
Introduction:

• In this presentation we will approach:
  – (i) the use of Kicktionary’s semantic tags for corpus annotation;
  – (ii) the development of a multilingual frame-based resource for soccer language.

• Concerning the annotation process, we will discuss the challenges faced to annotate sentences with:
  – (i) metaphoric lexical units;
  – (ii) polysemous lexical units;
  – (iii) support verbs.

• Concerning the development of a multilingual frame-based resource for soccer language, we will point:
  – (i) the need for including frame-to-frame relations in a resource for the soccer language;
  – (ii) the need for describing support-noun complex units.
<table>
<thead>
<tr>
<th>On the pitch</th>
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<tbody>
<tr>
<td><strong>Shot</strong></td>
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<tr>
<td>12 frames</td>
<td>269 lexical units</td>
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<tr>
<td><strong>Pass</strong></td>
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<tr>
<td>11 frames</td>
<td>226 lexical units</td>
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<td><strong>Goal</strong></td>
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<td>10 frames</td>
<td>148 lexical units</td>
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<tr>
<td><strong>One_On_One</strong></td>
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<tr>
<td>7 frames</td>
<td>129 lexical units</td>
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<tr>
<td><strong>Foul</strong></td>
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<tr>
<td>12 frames</td>
<td>211 lexical units</td>
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<tbody>
<tr>
<td>Ball_And_Goal (11 LUs)</td>
<td>Feign (6 LUs)</td>
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<tr>
<td>Finish (5 LUs)</td>
<td>Follow_Up (7 LUs)</td>
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<tr>
<td>Goal_Kickoff (7 LUs)</td>
<td>Hit (4 LUs)</td>
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<tr>
<td>Shoot_At (5 LUs)</td>
<td>Shot (125 LUs)</td>
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<td>Shot_Supports (25 LUs)</td>
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<tr>
<td>Bad_Pass (2 LUs)</td>
<td>Being_Free (14 LUs)</td>
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<tr>
<td>Connect (5 LUs)</td>
<td>Control (37 LUs)</td>
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<tr>
<td>Flick_On (7 LUs)</td>
<td>Intercept (11 LUs)</td>
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<tr>
<td>Pass_Combination (21 LUs)</td>
<td>Supply_Pass (12 LUs)</td>
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<tr>
<td>Award_Goal (11 LUs)</td>
<td>Celebrate_Goal (3 LUs)</td>
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<tr>
<td>Concede_Goal (7 LUs)</td>
<td>Convert_Chance (8 LUs)</td>
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<td>Goal (5 LUs)</td>
<td>Own_Goal (4 LUs)</td>
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<td>Prepare_Goal (6 LUs)</td>
<td>Score_Goal (7 LUs)</td>
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<td>Beat (49 LUs)</td>
<td>Challenge (18 LUs)</td>
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<td>Deny (19 LUs)</td>
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<td>One_On_One (25 LUs)</td>
<td>Take_On (5 LUs)</td>
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<tr>
<td>Advantage (4 LUs)</td>
<td>Concede_Compensation (4 LUs)</td>
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<td>Dissent (12 LUs)</td>
<td>Foul (54 LUs)</td>
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<tr>
<td>Give_Card (8 LUs)</td>
<td>Off: Referee_Decision (12 LUs)</td>
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<tr>
<td>Sanction (36 LUs)</td>
<td>Set_Piece (45 LUs)</td>
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<tr>
<td>Simulation (6 LUs)</td>
<td>Win_Compensation (6 LUs)</td>
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## Pass

**Scene:** Pass

### Lexical Units / Lexikalische Einheiten / Unités lexicales
- Ablage
- ablegen
- Abspiel
- abspielen
- Anspiel
- anspielen
- auf_die_Reise
- schicken
- aufflegen
- Bananenflanke
- bedienen
- Diagonalpass
- Einfeiern
- freispiel
- geben
- Hereingabe
- in_Szene
- setzen
- Linksflanke
- Maßflanke
- öfnender
- Pass
- Pass...passen
- querlegen
- Querpass
- Rechtsflanke
- Traumpass
- Vorarbeit
- Vorlage
- zurücklegen
- Zuspiel

### Frame elements / Frame-Elemente / Éléments de frame
1. PASSER
2. RECIPIENT
3. TARGET
4. SOURCE
5. DIRECTION
6. BALL
7. PART_OF_BODY
8. PASS
9. DISTANCE
10. PATH
11. MOVING_BALL
12. SHOT

### Word List

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*Note: The image seems to be a screenshot from an online dictionary service.*
Corpus Annotation Methodology:

- (a) translation of Kicktionary’s **scenes**, **frames** and **lexical units** to develop an annotation handbook;

- (b) development of a **specialized corpus**:
  - 100 texts describing soccer matches / 57,158 words.

- (c) segmentation of the texts into **sentences**:
  - 3,307 sentences.

- (d) **manual analysis** and **annotation** of the sentences by pairs of annotators;

- (e) using **SALTO** annotation tool.
Metaphoric Lexical Units:

**Scena: Pass/Frame: Intercept**

[Camacho \textit{INTERCEPTOR}] \textit{roubou} [grande bola \textit{BALL}] [no meio. \textit{INTERVENTION\_LOCATION}]

[Camacho \textit{INTERCEPTOR}] \textit{stole} [great ball \textit{BALL}] [in the half of the pitch. \textit{INTERVENTION\_LOCATION}]

**Scena: Pass/Frame: Intercept**

Mas [a zaga \textit{INTERCEPTOR}] \textit{cortou} [DNI \textit{PASS}].

But [the defense \textit{INTERCEPTOR}] \textit{cut out} [DNI \textit{PASS}].
Polysemy:

**Scena: Shot/ Frame: Shot**

[Tardelli\textsuperscript{SHOOTER}] [\textit{tocou} na saída do goleiro\textit{TARGET}].

[Tardelli\textsuperscript{SHOOTER}] [\textit{touched} when the goalkeeper left the area\textit{TARGET}].

**Scena: Pass/ Frame: Pass**

[O Furacão\textsuperscript{PASSER}] tentou \textit{tocar} mais [a bola\textit{BALL}] para tirar a velocidade do Timão.

[Furacão\textsuperscript{PASSER}] tried to \textit{touch} more [the ball\textit{BALL}] to slow down the velocity of the team.
Support Verbs:

**Scena: Pass/Frame: Pass**

[Ramirez\_\textit{PASSER}] \textit{fez} [o passe\_\textit{PASS}] [para Battión\_\textit{RECIPIENT}].

[Ramirez\_\textit{PASSER}] \textit{supplied} [pass\_\textit{PASS}] [to Battión\_\textit{RECIPIENT}].

**Scena: Pass/Frame: Pass**

[O autor do primeiro gol\_\textit{PASSER}] \textit{deu} [passe milimétrico\_\textit{PASS}] [para Adriano\_\textit{RECIPIENT}].

[The author of the first goal\_\textit{PASSER}] \textit{supplied} [milimetric pass\_\textit{PASS}] [to Adriano\_\textit{RECIPIENT}].
Frames and Support Verb Constructions:

Marcel **fez** o **gol** da vitória.
[Marcel *scored the victory goal.*]

O time colorado **sofreu um gol** no começo do segundo tempo.
[Internacional team *suffered a goal* in the beginning of the second time.]

Morales **perdeu o gol** incrível.
[Morales *missed the incredible goal.*]
Support Verb Constructions of the Soccer Language:

[Support Verb] + [Specialized Term]

marcar + gol ............ [score a gol]
marcar + falta ...... [award a free-kick]
sofrer + gol ............ [suffer a goal]
bater + falta ... [take a free-kick]
cobrar + pênalti ...[take a pênalti]
Foul Frame:

First step in a Foul frame / the offender perspective:

Nino cometeu falta sobre Muriqui.
[Nino committed foul on Muriqui.]
Foul Frame:

First step in a Foul frame / the offended perspective:

Cleber Santana **sofreu falta** na entrada da área.

[Cleber Santana *suffered foul* in the area entrance.]
Foul Frame:

Second step in a Foul frame:

(...)

mas o árbitro marcou falta no toque de mão involuntário do atacante.

[(...)]

but the referee awarded a free-kick for the involuntary hand touch of the striker.]
Foul Frame:

Third step in a Foul frame:

Marcelo Oliveira **cobrou falta** direto pela linha de fundo.

[Marcelo Oliveira *charged foul* directly from the goal line.]
Concluding Remarks:

- Our work with Kicktionary’s frames has led us to rethink some lexicographic aspects of Kicktionary:
  - Frame-to-frame relations ($\text{Score\_Goal, Award\_Goal}$)
  - Scenes and frames classification. ($\text{Goal: Score\_Goal, Award\_Goal}$)
  - Reframing of Kicktionary frames ($\text{Score\_Goal and Goal}$)
  - Frame definition for each frame.

- On the examples of the soccer language resource, we need to move from a running text annotation methodology to a lexicographic annotation methodology.

- On the equivalence of the lexical units and constructions, we need to decide the equivalence unit: *marcar um gol / score a gol, marcar uma falta / award a free-kick*.
Bibliography:


Thank you!