

FrameForm: An Open-source Annotation Interface for FrameNet

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Introduction

- With this study, we introduce FrameForm, an open-source annotation tool designed to accommodate predicate annotations based on Frame Semantics.
- FrameForm is:
 - User-friendly,
 - Responsive,
 - Open-source

What is FrameNet?

- FrameNet is a growing NLP resource developed by the International Computer Science Institute in Berkeley, California.
- It is based on Fillmore's Semantic Frames notion.
(See Fillmore et al., 1976 for a thorough discussion)

What is FrameNet?

- **Frame:** A schematic representation based on syntax and semantics.

Motion Frame: Some entity (Theme) starts out in one place (Source) and ends up in some other place (Goal), having covered some space between the two (Path). Alternatively, the Area or Direction in which the Theme moves or the Distance of the movement may be mentioned.

- Lexical Units (LUs): Predicates

Blow: 1. to move or be carried by or as if by wind
2. erupt, explode
3. to send forth a current of air or other gas

Developing the FrameForm

- Development process of FrameForm is closely tied to the creation process of Turkish FrameNet (Marşan et al., 2021): Our team needed an easy-to-use annotation tool.
- There are various FrameNet annotation tools:
 - FrameNet Brasil WebTool
 - SALTO
 - FrameNet Transformer
 - Karp

Developing the FrameForm

- None of these annotation tools allow a morphological analysis -which we gravely need for a morphologically rich language like Turkish.
- Thus, we created FrameForm.
- You can access FrameForm on GitHub:
<https://github.com/StarlangSoftware>

Features of FrameForm

- FrameForm saves every annotation pertaining to a Lexical Unit in a single file.
- The annotation process follows these steps:
 - Morphological Analysis
 - Semantic Annotation
 - Predicate Annotation
 - Annotation of Frame Elements
- FrameForm facilitates inter-annotator agreement.

Interfaces

- There are 4 different interfaces for each step of the annotation process:
 - Morphological analysis
 - Semantic annotation
 - Predicate marking
 - Frame element annotation

Interfaces / Morphological Analysis

Project

0001.train

Auto Morphological Disambiguation

Halat
rope.NOM
halat+NOUN+A3SG+PNON+NOM

çıkmasın
untie.NEG
çık+VERB+NEG+IMP+A3SG

diye
so that
diye+POSTP+PCNOM

sıkı
tight
sıkı+ADJ

bir
DETERMINER
bir+DET

şekilde
form.LOC
şekil+NOUN+A3SG+PNON+LOC

bağı
knot.ACC
bağ+NOUN+A3SG+P3SG+NOM

yaptık
do.PAST.1stPLU
yap+VERB+POS+PAST+A1PL

ağız
ağ+NOUN+A3SG+PNON+NOM^DB+VEF
ağız+NOUN+A3SG+PNON+NOM

..+PUNC

"We made a tight miller's knot to ensure that the rope wouldn't get untied."

Interfaces / Semantic Annotation

The interface is titled "Project" and features a toolbar with navigation buttons (back, forward, search, etc.) and a checkbox for "Auto Semantic Detection". A button labeled "0001.train" is visible. The main area displays a list of actions, with a dropdown menu open for the action "çıkmasın". The dropdown menu lists various actions, including "Ay, Güneş görünmek", "Gelmek", "Bulunduğu yerden fırlamak, kopmak", "Bir şeyin düzeni bozulmak, eskisinden daha değişik", "Erişmek; görmek", "Harcamak zorunda kalmak", "Vermeye katlanmak", "deniz, göl vb.nden karaya geçmek", "Belli bir varlık kazanmak, ortaya çıkmak", "birinin görüş ve düşüncesini benimsemek, desteklen", "yayımlama işi yapılmak", "yüksek, öfkeli bir sesle söylemek", "Sağ olmak, yaşamak, bulunmak", "Bir yere ulaşmak, varmak", and "olmak". The interface also shows text segments with semantic annotations, such as "Halat" (rope.NOM) and "Kenevirden yapılmış çok", "şekilde" (do.PAST.1stPLU), and "Olma biçimi; durum; hâl".

Project

Auto Semantic Detection

0001.train

Halat
rope.NOM
TUR10-0322480
Kenevirden yapılmış çok

şekilde
do.PAST.1stPLU
TUR10-0727420
Olma biçimi; durum; hâl

çıkmasın

- Ay, Güneş görünmek
- Gelmek
- Bulunduğu yerden fırlamak, kopmak
- Bir şeyin düzeni bozulmak, eskisinden daha değişik
- Erişmek; görmek
- Harcamak zorunda kalmak
- Vermeye katlanmak
- deniz, göl vb.nden karaya geçmek
- Belli bir varlık kazanmak, ortaya çıkmak
- birinin görüş ve düşüncesini benimsemek, desteklen
- yayımlama işi yapılmak
- yüksek, öfkeli bir sesle söylemek
- Sağ olmak, yaşamak, bulunmak
- Bir yere ulaşmak, varmak
- olmak

diye

sıkı

bir
DETERMINER
TUR10-0105590
Tek

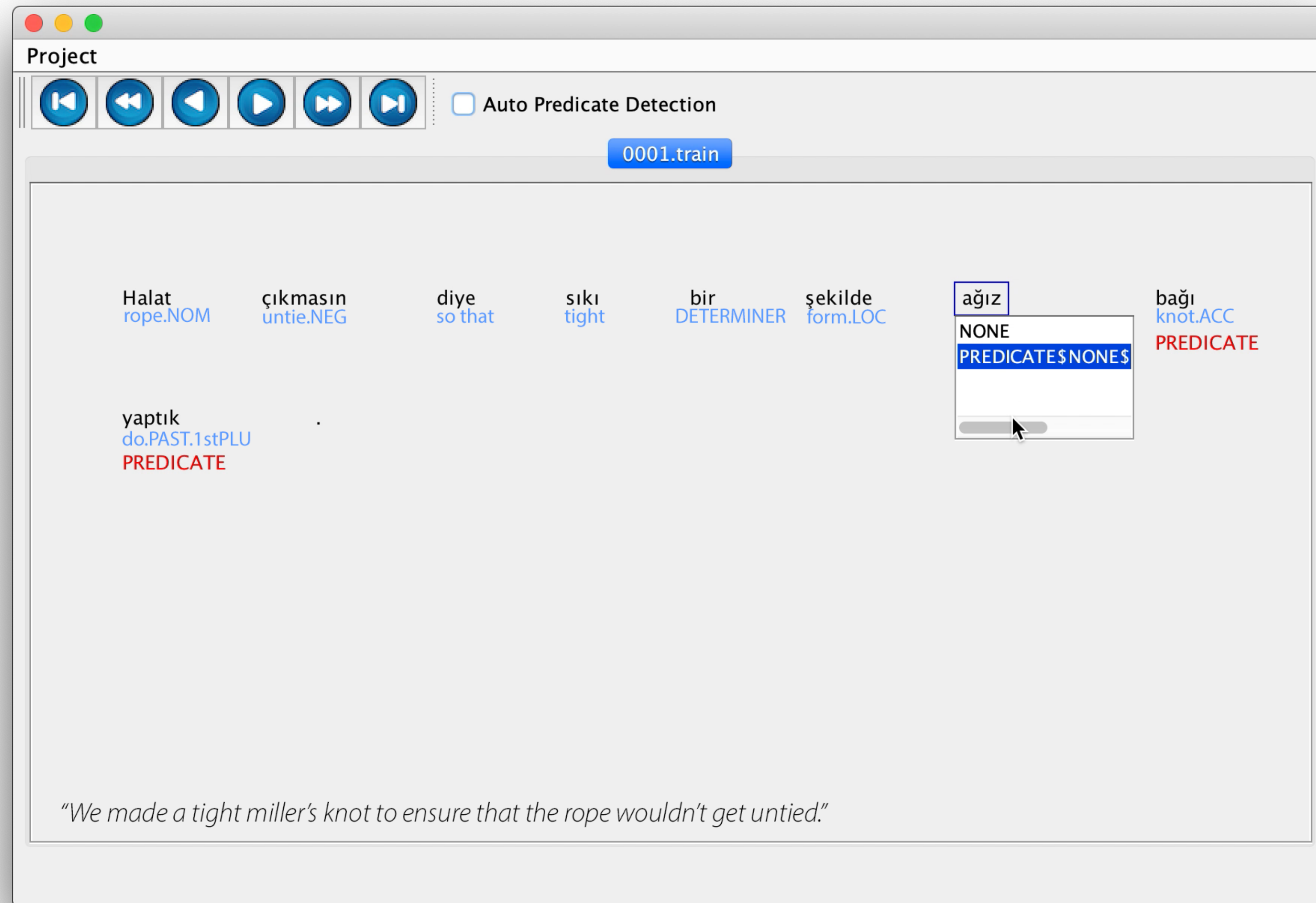
10-0773490
sıkıştırılmaktan vey

10-0922970
kayıp çıkmasını engellemek

TUR10-1081860
kümelenin bittiğini anlat

"We made a tight miller's knot to ensure that the rope wouldn't get untied."

Interfaces / Predicate Marking



Interfaces / Frame Element Annotation

The screenshot displays a software interface for frame element annotation. At the top, a 'Project' window title bar is visible. Below it is a toolbar with navigation icons (back, forward, search, etc.). A blue button labeled '0001.train' is positioned above the main workspace. The workspace contains a sentence with words annotated with frame elements:

Word	Frame Element
Halat	rope.NOM
çıkmasın	untie.NEG
diye	so that
sıkı	tight
bir	DETERMINER
bağı	knot.ACC
yaptık	do.PAST.1stPLU

The sentence is: "We made a tight miller's knot to ensure that the rope wouldn't get untied."

On the right side, a dropdown menu is open, showing a list of frame elements under the heading 'Preventing_Or_Letting'. The list includes: Agent, Allowed_category, Circumstances, Degree, Depictive, Event_description, Explanation, Frequency, and Manner. The 'Manner' element is currently selected.

What can be annotated using FrameForm?

It allows the user to:

- Create new frames,
- Transfer data between the frames,
- Manually edit or change sample sentences,
- Delete Lexical Units,
- Do morphologic analysis, semantic annotation, predicate marking and frame element annotation.

How can FrameForm be used for languages other than Turkish?

- FrameForm uses Starlang's Morphological Analysis Tool and WordNet (as at the dictionary).
- To use FrameForm for a different language, a (different) morphological analysis tool and dictionary pertaining to that language should be introduced. As FrameForm is an open-source tool, it allows users to modify it in accordance with their needs.

Concluding Remarks

- With FrameForm, we aimed to create a **potent, flexible, easy-to-use annotation tool**.
- In order to ensure that **FrameForm alone is enough for every step of the FrameNet annotation and maintenance processes**, we equipped our tool with a wide range of features including semantic annotation and Frame Element annotation.
- Further studies can focus on the compatibility of FrameForm with other languages and what should be improved.

References

Charles J Fillmore et al. 1976. Frame semantics and the nature of language. In Annals of the New York Academy of Sciences: Conference on the origin and development of language and speech, volume 280, pages 20–32. New York.

Büşra Marşan, Neslihan Kara, Merve Özçelik, Bilge Nas Arıcan, Neslihan Cesur, Aslı Kuzgun, Ezgi Sanıyar, Oğuzhan Kuyrukçu, and Olcay Taner Yıldız. 2021. Building the Turkish FrameNet. In Proceedings of the 11th Global Wordnet Conference, pages 118–125, University of South Africa (UNISA). Global Wordnet Association.