



# Extending VerbNet's Verb-Specific Features to Enhance the Selectional Preferences of the Semantic Roles



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## VerbNet Semantic Components

**Hierarchical classes of verbs** with semantic similarities

**Semantic roles** for each class with **selectional preferences** for entity types

**FOL semantic representations** that capture the general subevent sequence for all verbs in a class

**Verb-specific semantic features** that further subdivide a class

## Semantic Role Selectional Preferences

animate	147	comestible	6
organization	127	currency	5
concrete	75	abstract	4
location	32	animal	3
int_control	25	plural	2
region	20	reflexive	3
machine	14	human	3
body_part	14	vehicle	3
communication	10	elongated	2
solid	7	substance	2

## Motivation

Increase the scope and specificity of the selectional preferences

Improve the semantic coherence of classes by creating subsets of verbs that share semantic features

Allow connections across classes based on semantic domain (e.g., *bake* in the class Cooking- 45.3, *eat* in the class Eat-39.1, and *spoonfeed* in the class Feeding-39.7, could be connected with a **food** selectional preference for the **Patient**

Enhance the semantic representations when they are instantiated by particular verbs

## Using verb-specific features in the semantic representations

*Cynthia gobbled the pizza.*

**has\_location** ( $e_1$ , **Patient.food**, ?Source)

**do**( $e_2$ , Agent)

**body\_process** ( $e_3$ , Agent)

**motion** ( $e_3$ , **Patient.food**, ?Trajectory)

**contain** ( $e_4$ , Agent, **Patient.food**)

**cause**( $e_2$ ,  $e_3$ )

## Sample of Proposed New Features

Class; Role	Verb-Spec Feature	Example Verb
Escape-51.1; Trajectory	upward downward toward away	<i>rise</i> <i>fall</i> <i>approach</i> <i>recede</i>
Calve-28.1; Patient	canine feline bovine	<i>pup</i> <i>kitten</i> <i>calve</i>
Create-26.4; Result	written_text music dance image artifact	<i>author</i> <i>compose</i> <i>choreograph</i> <i>silkscreen</i> <i>fabricate</i>
Preparing-26.3; V_final_state	cooked fermented mixed burning	<i>bake</i> <i>brew</i> <i>mix</i> <i>kindle</i>
Transcribe-25.4; Theme	text image numbers	<i>type</i> <i>photograph</i> <i>tally</i>

Proposed 111 verb-specific features across 49 classes