
E-HowNet

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CKIP E-HOWNET TOOLS

1.1 Git

<https://github.com/emfomy/ehownet>

1.2 PyPI

<https://pypi.org/project/ehownet>

1.3 Documentation

<https://ehownet.readthedocs.io/>

1.4 Author

- Mu Yang <<https://muyang.pro>>

1.5 Requirements

- Python 3.6+
- PLY (Python Lex-Yacc) 3.11+
- TreeLib 1.5.5+
- wcwidth 0.1.7+

1.6 Installation

```
pip install -U ehownet
```

USAGE

- See <https://ehownet.readthedocs.io/en/latest/main/grammar.html> for E-HowNet grammar.
- See https://ehownet.readthedocs.io/en/latest/main/parse_node.html for E-HowNet parsing nodes usage.

2.1 E-HowNet Parser

2.1.1 CLI

```
# Usage
ehn-parser <text> [<text> ...]

# Example
ehn-parser \
    "{MusicTool|_x:predication={own|:possession={|PushingButton:whole={x}}}}}" \
    "{InstitutePlace|:telic={or({experiment|:location={~}},{research|:location={~}})}" \
    "TimePoint={},manner={urgent|}"
```

Output:

```
#1
[Entity $x] MusicTool|
├─ [Feature] predication
│   └─ [Entity] own|
│       └─ [Feature] possession
│           └─ [Entity] |PushingButton
│               └─ [Feature] whole
│                   └─ $x

#2
[Entity] InstitutePlace|
├─ [Feature] telic
│   └─ [Entity]
│       └─ [Function] or
│           ├── [Entity] experiment|
│           │   └─ [Feature] location
│           │       └─ [TildeEntity]
│           └─ [Entity] research|
│               └─ [Feature] location
│                   └─ [TildeEntity]
```

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```
#3
[Root]
├── [Feature] TimePoint
│   └── [AnyEntity]
└── [Feature] manner
    └── [Entity] urgent|
```

2.1.2 Python API

```
from ehn.parse import EhnParser

text = '{MusicTool|_x:predication={own|:possession={|PushingButton:whole={x}}}}'

parser = EhnParser()
ress = parser(text, debug=False)
for res in ress:
    print(res)
```

Output:

```
[Entity $x] MusicTool|
├── [Feature] predication
│   └── [Entity] own|
│       └── [Feature] possession
│           └── [Entity] |PushingButton
│               └── [Feature] whole
│                   └── $x
```

CHAPTER THREE

LICENSE



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E-HOWNET GRAMMAR

This section describes the grammar of the E-HowNet expression.

4.1 Text

- TEXT
 - [A-Za-z0-9\x80-\U0010FFFF|+|-|.]+
- NUMBER
 - e.g. 1, 0.1, 1e-4
- COINDEX
 - x[0-9]*

4.2 Node

4.2.1 Entity

- *EhnParseNormalEntity*
 - {TEXT}
 - {TEXT:FEATURE}
 - {TEXT:FEATURE, FEATURE}
 - {TEXT:FEATURE, FEATURE, ...}
 - {TEXT_COINDEX:FEATURE}
 - {TEXT_COINDEX:FEATURE, FEATURE}
 - {TEXT_COINDEX:FEATURE, FEATURE, ...}
- *EhnParseFunctionEntity*
 - {FUNCTION}
 - {FUNCTION:FEATURE}
 - {FUNCTION:FEATURE, FEATURE}
 - {FUNCTION:FEATURE, FEATURE, ...}

- {FUNCTION_COINDEX:FEATURE}
 - {FUNCTION_COINDEX:FEATURE,FEATURE}
 - {FUNCTION_COINDEX:FEATURE,FEATURE,...}
- *EhnParseAnyEntity*
 - { }
- *EhnParseNameEntity*
 - { "TEXT" }
- *EhnParseNumberEntity*
 - { NUMBER }
- *EhnParseTildeEntity*
 - { ~ }
- *EhnParseCoindexEntity*
 - { COINDEX }

4.2.2 Feature

- *EhnParseNormalFeature*
 - TEXT=ENTITY
 - TEXT=RESTRICTION
- *EhnParseFunctionFeature*
 - FUNCTION=ENTITY
 - FUNCTION=RESTRICTION

4.2.3 Function

- *EhnParseFunction*
 - TEXT ()
 - TEXT (RESTRICTION)
 - TEXT (ENTITY)
 - TEXT (ENTITY,ENTITY)
 - TEXT (ENTITY,ENTITY,...)

4.2.4 Restriction

- *EhnParseRestriction*
 - /ENTITY
 - /ENTITY_COINDEX

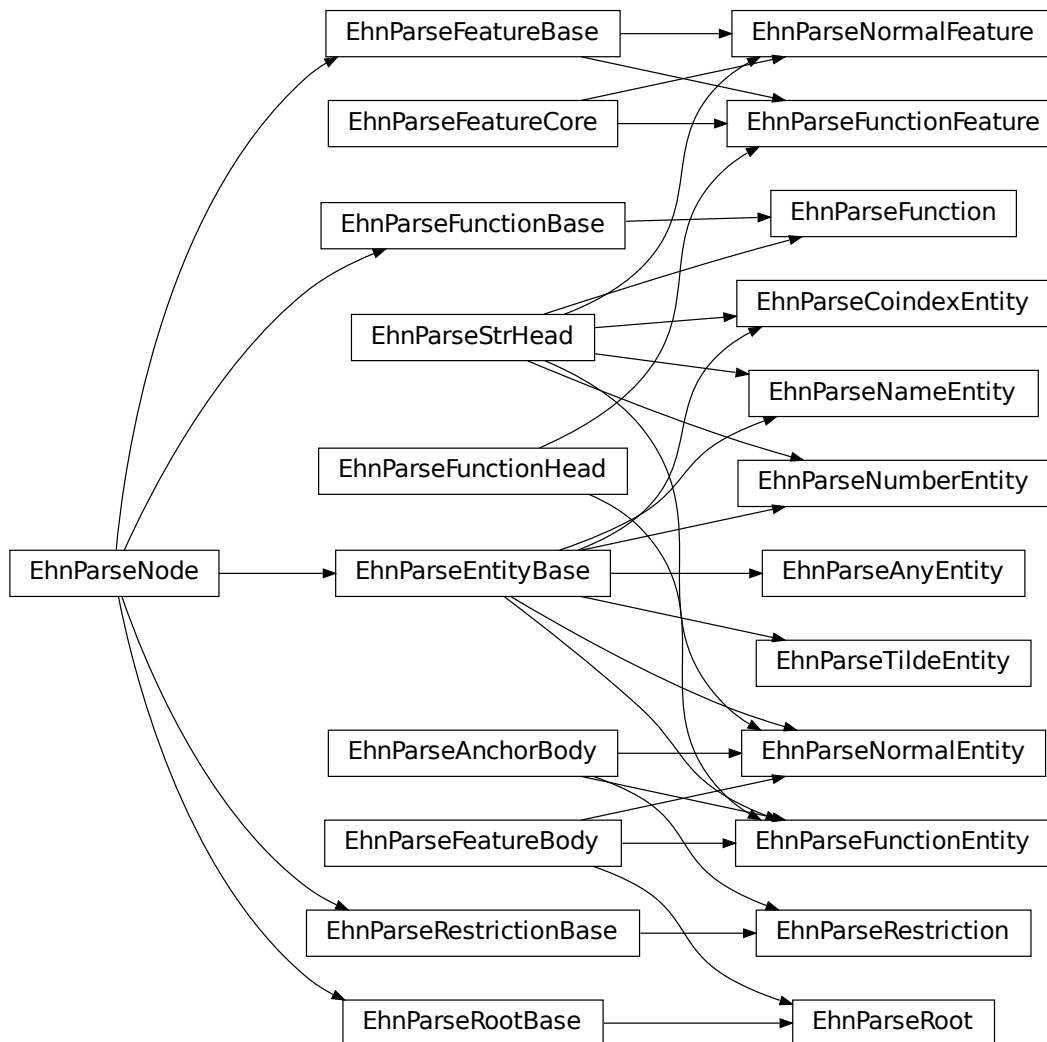
4.3 Valid Expressions

ENTITY or any number of FEATURES joined by , s.

- ENTITY
- FEATURE
- FEATURE, FEATURE
- FEATURE, FEATURE, ...

PARSE NODES

There are five types of nodes in E-HowNet expression — *Entity*, *Feature*, *Function*, *Restriction*, and *Root*.



5.1 Major Nodes

class EhnParseNode

The prototype of E-HowNet parsing nodes.

head: **str**

The head of this node.

children ()

Yields all direct child nodes of this node.

descendant ()

Yields all descendant nodes (including self) of this node.

tree () → `treelib.Tree`

Generates a tree representation of this node and all its descendant nodes.

5.1.1 Entity

class EhnParseEntityBase

The base class of E-HowNet parsing entity nodes.

Subclasses:

- *EhnParseNormalEntity* A normal entity. Can be an *anchor*.
- *EhnParseFunctionEntity* An entity with *function head*. Can be an *anchor*.
- *EhnParseAnyEntity* A placeholder entity.
- *EhnParseNameEntity* A name entity.
- *EhnParseNumberEntity* A number entity.
- *EhnParseTildeEntity* An entity refers to the parent entity.
- *EhnParseCoindexEntity* An entity refers to an anchor entity.

property features

A list of *Features*.

5.1.2 Feature

class EhnParseFeatureBase

The base class of E-HowNet parsing feature nodes.

Subclasses:

- *EhnParseNormalFeature* A normal feature.
- *EhnParseFunctionFeature* An feature with *function head*.

property value

Can be either *Entity* or *Restriction*.

5.1.3 Function

class EhnParseFunctionBase

The base class of E-HowNet parsing function nodes.

Subclasses:

- *EhnParseFunction*.

property arguments

A list of *Entities* or *Restriction*

5.1.4 Restriction

class EhnParseRestrictionBase

The base class of E-HowNet parsing function nodes.

Subclasses:

- *EhnParseRestriction*. Can be an *anchor*.

property value

Must be an *Entity*.

5.1.5 Root

class EhnParseRootBase

The base class of E-HowNet parsing root nodes. Works similar to entities but is not an entity. Used only in feature-based expressions.

Subclasses:

- *EhnParseRoot*.

property features

A list of *Features*.

5.2 Partial Nodes

5.2.1 Function Head

class EhnParseFunctionHead

The base class of nodes with a function as its head.

Note that the attribute **obj.head** of this object **obj** returns **obj.function.head**.

Subclasses:

- *EhnParseFunctionEntity*
- *EhnParseFunctionFeature*

property function

Must be a *Function*.

5.2.2 Anchor Body

class EhnParseAnchorBody

The base class of anchor nodes.

Subclasses:

- *EhnParseNormalEntity*
- *EhnParseFunctionEntity*
- *EhnParseRestriction*

property anchor

The *Anchor*.

5.2.3 Anchor

class EhnParseAnchor

The coindex target.

head: str

The coindex of this anchor. Must be $x[0-9]^*$.

EHN PACKAGE

Subpackages

6.1 ehnp.parse package

Subpackages

6.1.1 ehnp.parse.node package

Please refer the tutorial “*Parse Nodes*”.

Submodules

ehnp.parse.node.base module

Please refer the tutorial “*Parse Nodes*”.

```
class ehnp.parse.node.base.EhnParseNode
    Bases: object
    abstract children()
    descendant()
    tree()

class ehnp.parse.node.base.EhnParseEntityBase
    Bases: ehnp.parse.node.base.EhnParseNode

class ehnp.parse.node.base.EhnParseFeatureBase
    Bases: ehnp.parse.node.base.EhnParseNode

class ehnp.parse.node.base.EhnParseFunctionBase
    Bases: ehnp.parse.node.base.EhnParseNode

class ehnp.parse.node.base.EhnParseRestrictionBase
    Bases: ehnp.parse.node.base.EhnParseNode

class ehnp.parse.node.base.EhnParseRootBase
    Bases: ehnp.parse.node.base.EhnParseNode

class ehnp.parse.node.base.EhnParseAnchor (head=None)
    Bases: object
```

```
class ehn.parse.node.base.EhnParseStrHead(head)
    Bases: object

    property head

class ehn.parse.node.base.EhnParseFunctionHead(function)
    Bases: object

    property head

    property function

class ehn.parse.node.base.EhnParseFeatureBody(*features)
    Bases: object

    property features

    add_feature(feature)

class ehn.parse.node.base.EhnParseAnchorBody(anchor=None)
    Bases: object

    property anchor
```

ehn.parse.node.entity module

Please refer the tutorial “*Parse Nodes*”.

```
class ehn.parse.node.entity.EhnParseNormalEntity(head, *features, anchor=None)
    Bases: ehn.parse.node.base.EhnParseEntityBase, ehn.parse.node.base.
            EhnParseStrHead, ehn.parse.node.base.EhnParseFeatureBody, ehn.parse.node.
            base.EhnParseAnchorBody

    children()

class ehn.parse.node.entity.EhnParseFunctionEntity(function, *features, an-
                                                    chor=None)
    Bases: ehn.parse.node.base.EhnParseEntityBase, ehn.parse.node.base.
            EhnParseFunctionHead, ehn.parse.node.base.EhnParseFeatureBody, ehn.parse.
            node.base.EhnParseAnchorBody

    children()

class ehn.parse.node.entity.EhnParseAnyEntity
    Bases: ehn.parse.node.base.EhnParseEntityBase

    property head

    children()

class ehn.parse.node.entity.EhnParseNameEntity(head)
    Bases: ehn.parse.node.base.EhnParseEntityBase, ehn.parse.node.base.
            EhnParseStrHead

    children()

class ehn.parse.node.entity.EhnParseNumberEntity(head)
    Bases: ehn.parse.node.base.EhnParseEntityBase, ehn.parse.node.base.
            EhnParseStrHead

    children()

class ehn.parse.node.entity.EhnParseTildeEntity
    Bases: ehn.parse.node.base.EhnParseEntityBase
```

property head

children()

```
class ehnp.parse.node.entity.EhnParseCoindexEntity (head)
    Bases:      ehnp.parse.node.base.EhnParseEntityBase,      ehnp.parse.node.base.
                EhnParseStrHead
    children()
```

ehnp.parse.node.feature module

Please refer the tutorial “*Parse Nodes*”.

```
class ehnp.parse.node.feature.EhnParseFeatureCore (value)
    Bases: object
    property value

class ehnp.parse.node.feature.EhnParseNormalFeature (head, value)
    Bases:      ehnp.parse.node.base.EhnParseFeatureBase,      ehnp.parse.node.base.
                EhnParseStrHead, ehnp.parse.node.feature.EhnParseFeatureCore
    children()

class ehnp.parse.node.feature.EhnParseFunctionFeature (function, value)
    Bases:      ehnp.parse.node.base.EhnParseFeatureBase,      ehnp.parse.node.base.
                EhnParseFunctionHead, ehnp.parse.node.feature.EhnParseFeatureCore
    children()
```

ehnp.parse.node.other module

Please refer the tutorial “*Parse Nodes*”.

```
class ehnp.parse.node.other.EhnParseRoot (*features)
    Bases:      ehnp.parse.node.base.EhnParseRootBase,      ehnp.parse.node.base.
                EhnParseFeatureBody
    property head
    children()

class ehnp.parse.node.other.EhnParseFunction (head, *arguments)
    Bases:      ehnp.parse.node.base.EhnParseFunctionBase,      ehnp.parse.node.base.
                EhnParseStrHead
    property arguments
    add_argument (argument)
    children()

class ehnp.parse.node.other.EhnParseRestriction (value, anchor=None)
    Bases:      ehnp.parse.node.base.EhnParseRestrictionBase,      ehnp.parse.node.base.
                EhnParseAnchorBody
    property head
    property value
    children()
```

Submodules

6.1.2 ehnp.parse.parser module

exception ehnp.parse.parser.**EhnSyntaxError** (*args, pos=None)

Bases: SyntaxError

show_pos (text)

Show error position.

Parameters **text** (str) – original input text

class ehnp.parse.parser.**EhnLexer** (**kwargs)

Bases: ehnp.parse.parser._EhnLexer

E-HowNet Lexer.

class ehnp.parse.parser.**EhnParser** (lexer=None, **kwargs)

Bases: ehnp.parse.parser._EhnParser

E-HowNet Parser.

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