### LANGUAGE RESEARCH INFRASTRUCTURE IN CZECHIA

# LINDAT/CLARIN

PAVEL STRAŇÁK



# LINDAT/CLARIN

# LINDAT/CLARIN

# LINDAT/CLARIN LINguistic

# LINDAT/CLARIN LINguistic DATa ... very broadly

# LINDAT/CLARIN LINguistic DATa CLARIN

# LINDAT/CLARIN LINguistic DATa Common LAnguage Research and technology INfrastructure



# LINDAT/CLARIN

- Czech national project; node of CLARIN ERIC
- Operational since 2014
- Users:
  - Researchers in SSH and Computational Linguistics
- Technology:
  - Repository (resources), Services, Applications
- Knowledge, Support and Training



# LANGUAGE TECHNOLOGY

- Natural Language Processing NLP
  - Analysis, synthesis of spoken and written language
  - Machine Translation, Information Extraction, ...
  - Search in texts, audio, video, images

- State-of-the-art technology in NLP
  - "Statistical" methods:
    - Machine learning incl. neural networks
    - Need for (large) Language Resources Texts, multimodal
      - Repositories, identification, replication of experiments, standards



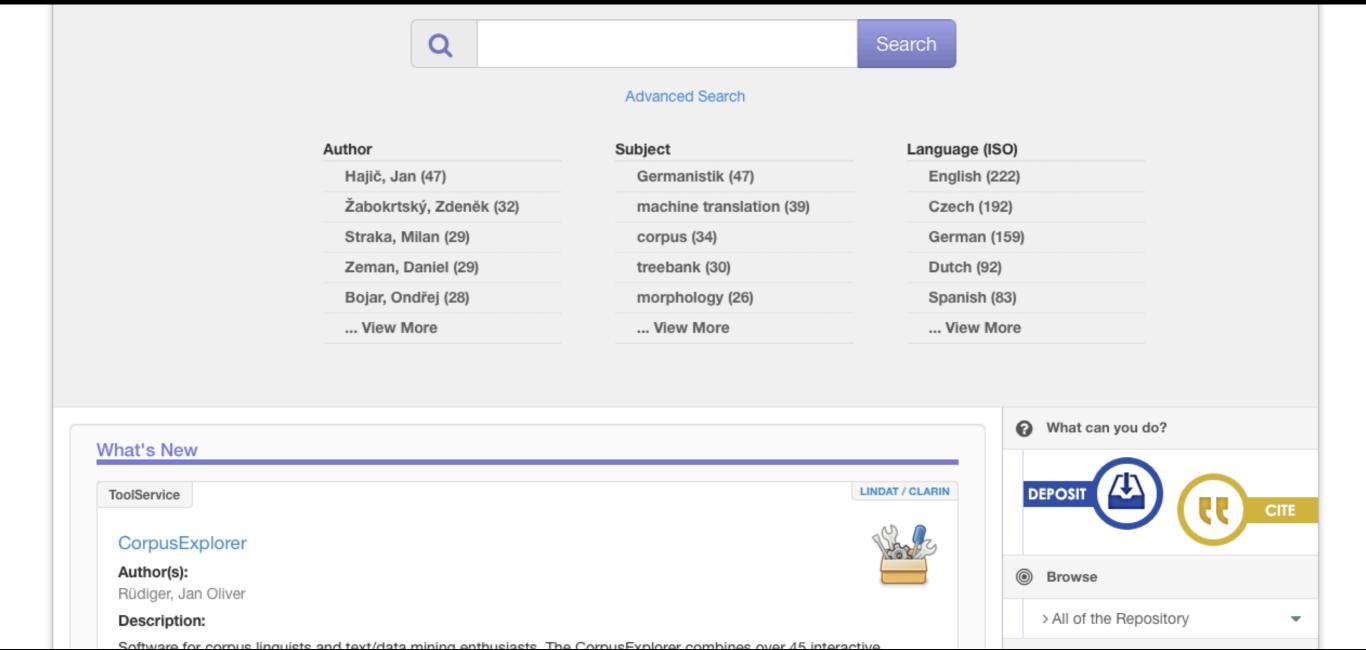
# USERS

- Everyone
  - communicates in and works with natural language!
- ... immediate users of the infrastructure:
  - Language Technology researchers
    - Universities, Research organisations
      - Need lots of data, easy to get, clean open licensing
  - "Content" users:
    - Linguists, historians, teachers, psychologists, sociologists, ...
      - Need identifiable data, preprocessed, searchable, easy-to-use services and applications
    - General public:
      - proper language use IRLG; holocaust documentation: CVH Malach



# Data Repository

### PRESERVE AND FIND LANGUAGE DATA AND NLP TOOLS



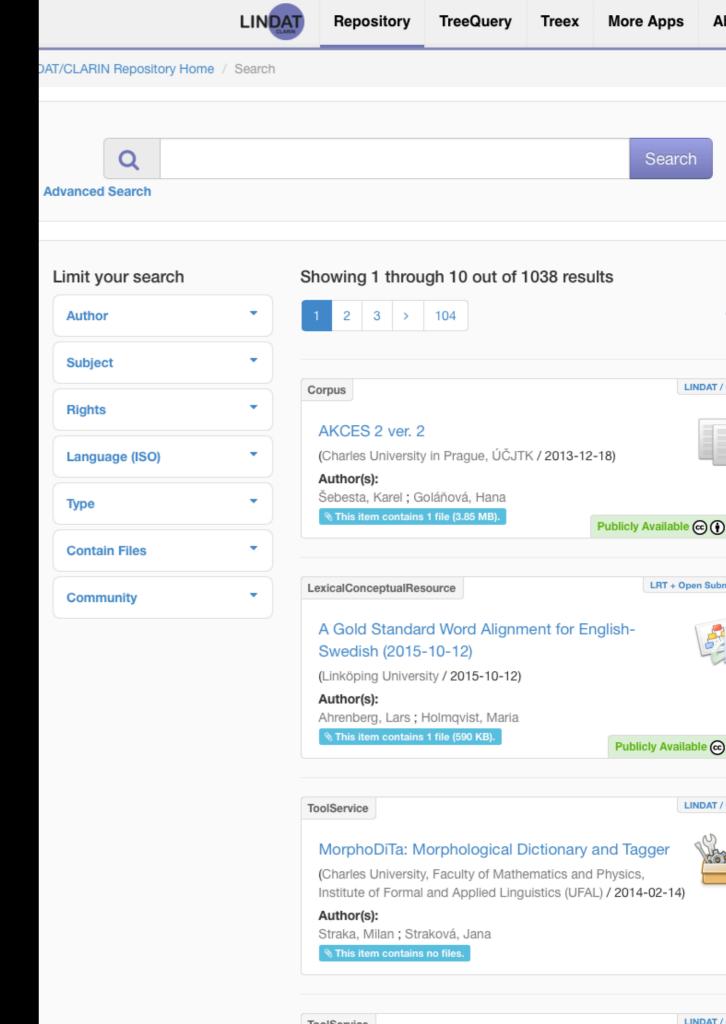


# DATA REPOSITORY

- ~ 500 registered users
  - submitters & users signing licenses (not everything can be Open Access)
- 200+ Data Records
  - > 1000 Metadata Records
  - 80 languages
- 100 TB+ Data in Repository (+ 1PB of UCS Shoah Foundation Archive)

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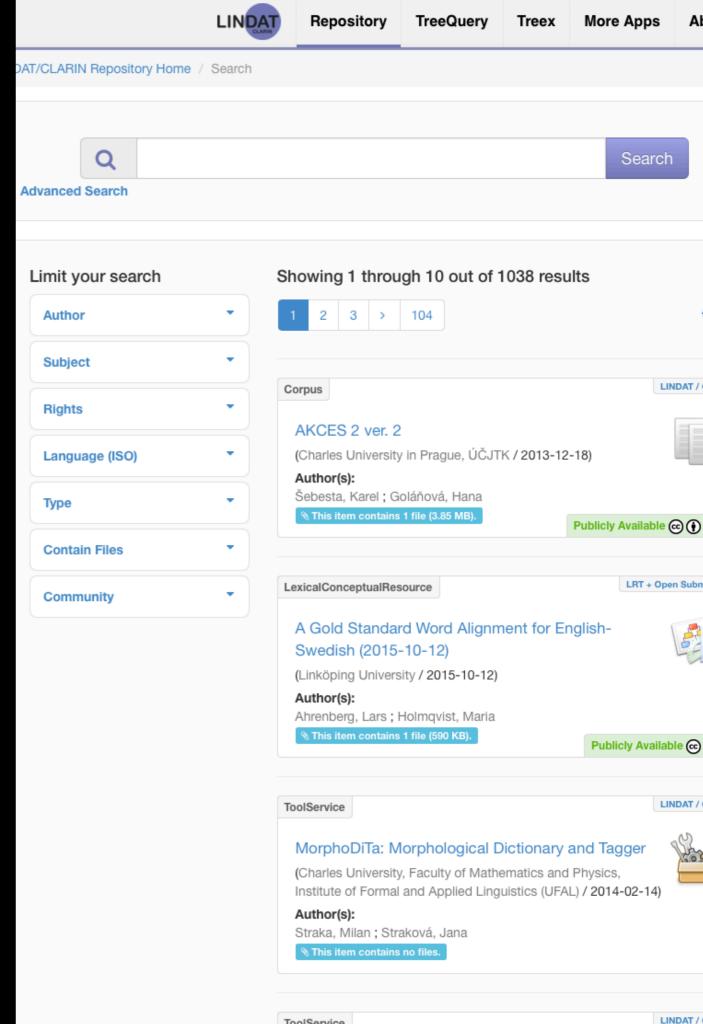
- Safe preservation (upload and don't worry)
- Discovery & Reuse
- Direct data citation (works in Google Scholar)
- Licensing (Open Access, but also more options)
- Versioning
- Language data and tools
- Worldwide (for everyone), easy to use













# UPLOAD AND DON'T WORRY



### **How to Deposit**

Only authenticated users can deposit items. If you cannot find your home organisation in the Login dialog list of organisations then register at clarin.eu and authenticate using "clarin.eu website account". In case you cannot use any authentication method above or if you encounter a problem, do not hesitate to contact our Help Desk and we can create a local account for you.

### Step 1: Login

To start a new submission you have to login first. Click Login under My Account in the right menu panel.

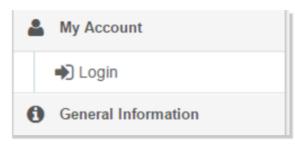
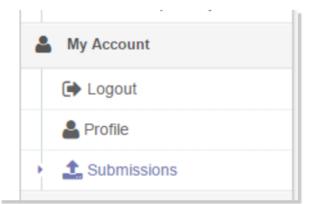
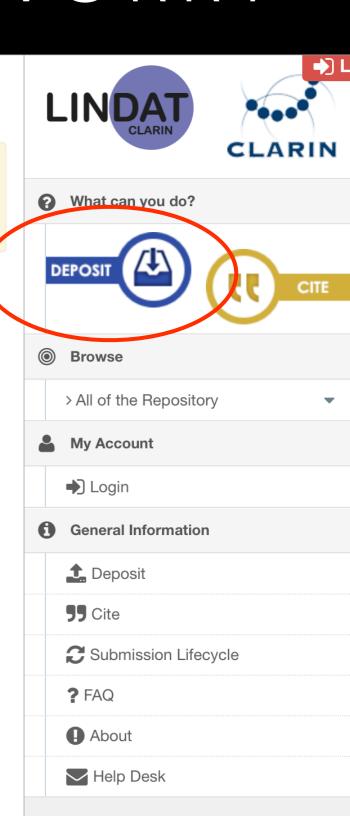


Fig1. Menu Login

### Step 2: Starting a new submission

Now you have a new menu item 'Submissions' under My Account. Click on Submissions to go to the Submissions screen.

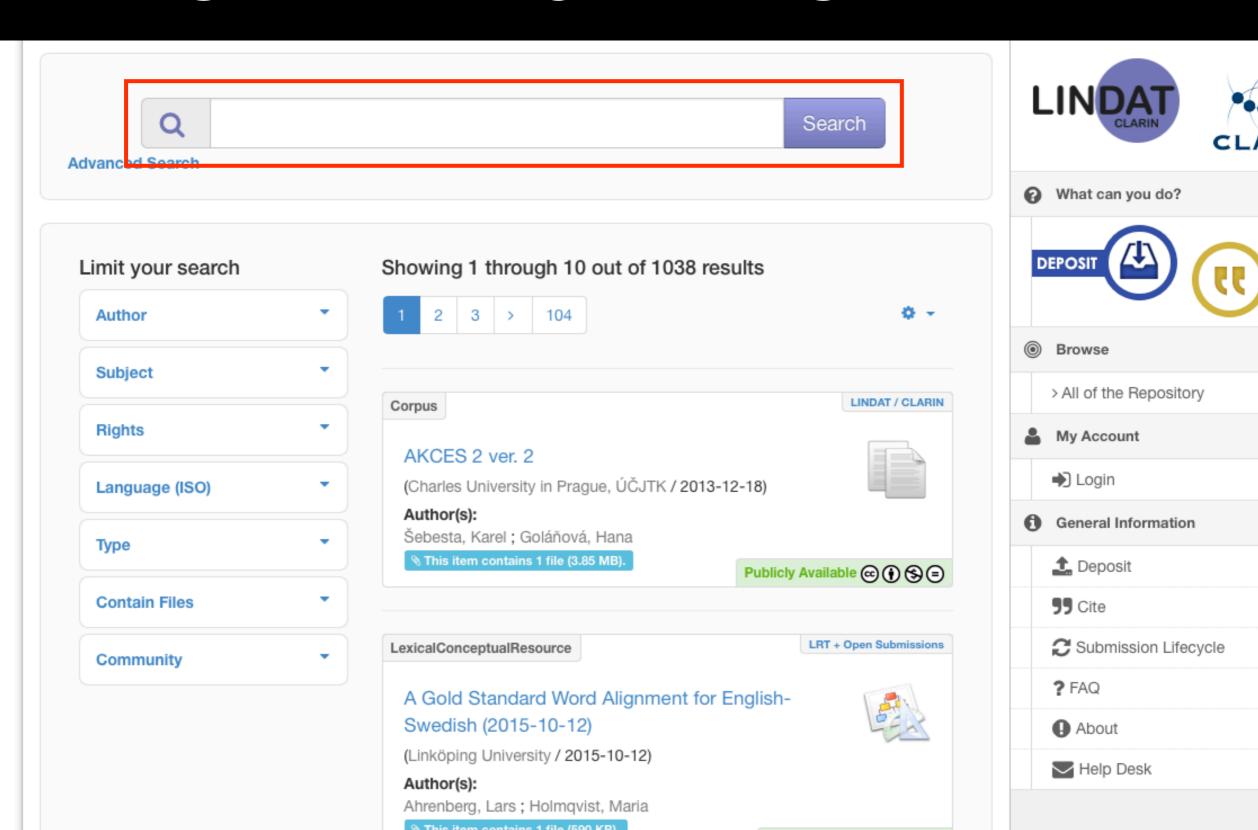






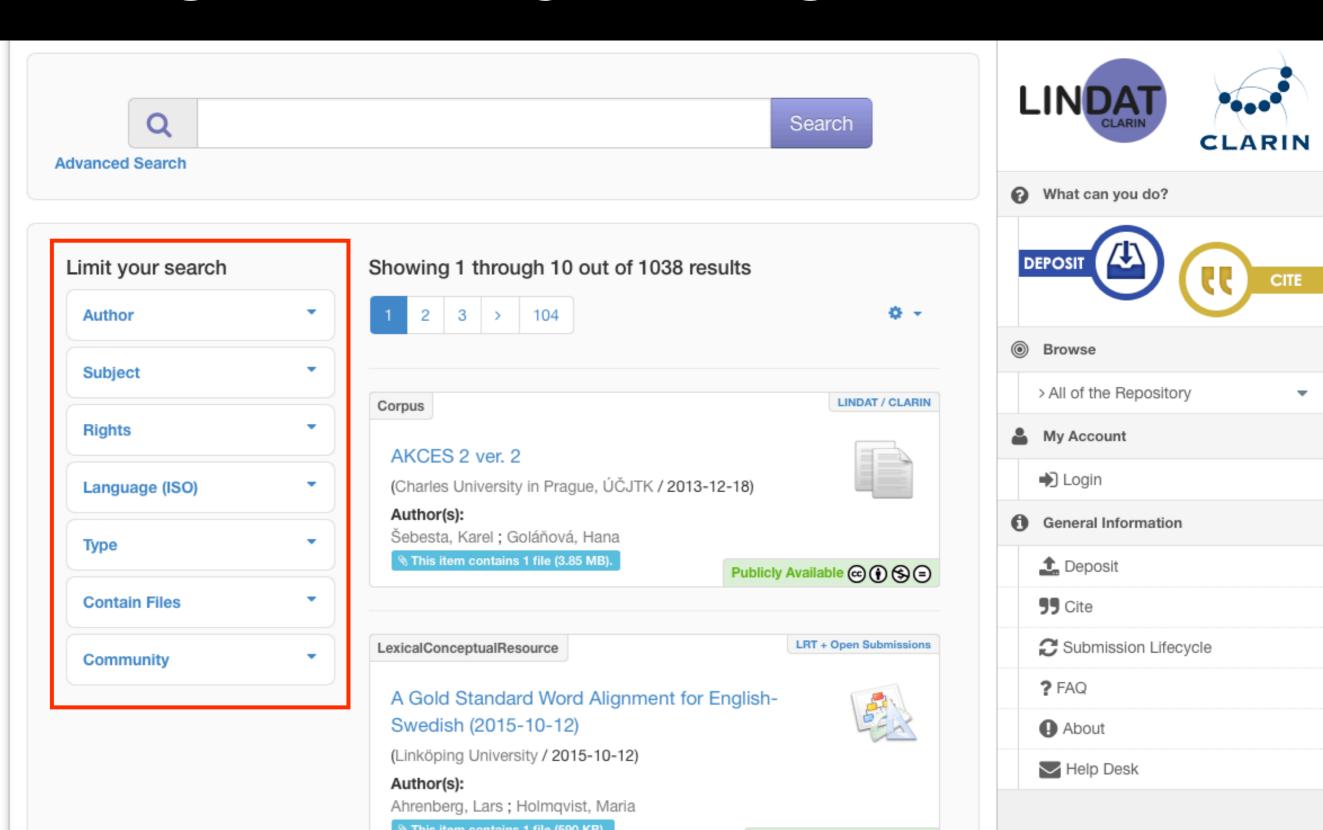
CITE

# FACETED SEARCH





# FACETED SEARCH





# GOOGLE



prague dependency treebank 3.0





Vše

Obrázky

Nákupy

Мару

Videa

Více

Nastavení

Nástroje

Přibližný počet výsledků: 13 900 (0,44 s)

### Vědecké články o prague dependency treebank 3.0

Prague dependency treebank 3.0 - Bejček - Počet citací tohoto článku: 47

Prague Dependency Treebank - Hajič - Počet citací tohoto článku: 385

The Prague dependency treebank - Böhmová - Počet citací tohoto článku: 423

### Prague Dependency Treebank 3.0 | ÚFAL

https://ufal.mff.cuni.cz/pdt3.0 ▼ Přeložit tuto stránku

Introduction. The **Prague Dependency Treebank 3.0** (PDT 3.0) annotates the same texts as the PDT 2.0 (Hajič et al. 2006), PDT 2.5 (Bejček et al. 2011), and the Prague Discourse Treebank 1.0 (PDIT 1.0, Poláková et al. 2012). The annotation on the four layers was further fixed and improved in various aspects. Moreover ...

### The Prague Dependency Treebank 2.0.

https://ufal.mff.cuni.cz/pdt2.0/ ▼ Přeložit tuto stránku

The **Prague Dependency Treebank** 2.0 (PDT 2.0) contains a large amount of Czech texts with complex and interlinked morphological (2 million words), syntactic (1.5 MW) and complex semantic annotation ... Please note that new versions of this corpus have been published: PDT **3.0** (2013), PDIT 1.0 (2012), PDT 2.5 (2012).

### Prague Dependency Treebank 3.0 (PDT 3.0)

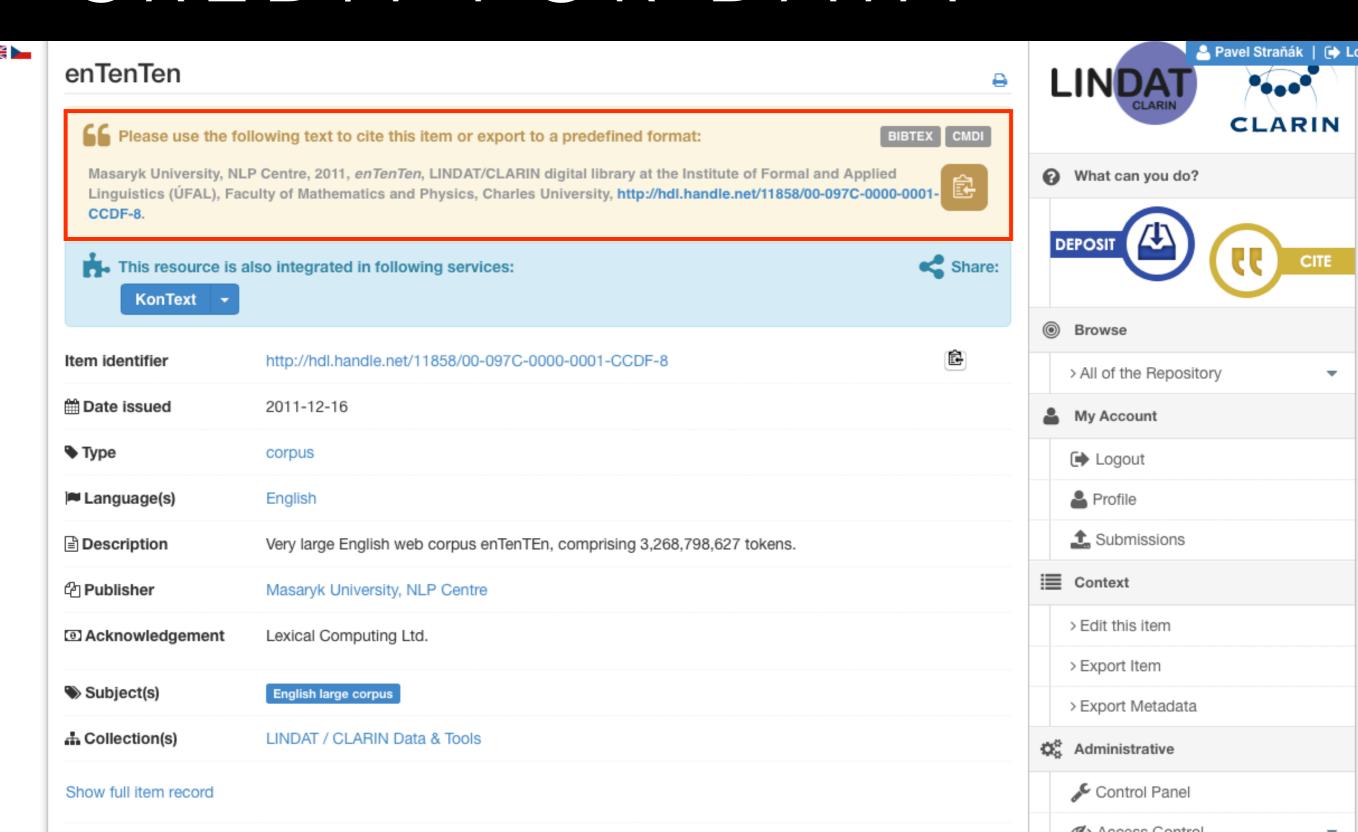
https://lindat.mff.cuni.cz/repository/xmlui/bitstream/.../PDT30\_index\_lindat.html?...

Prague Dependency Treebank 3.0 (PDT 3.0). Overview. The Prague Dependency Treebank 3.0 (PDT 3.0) annotates the same texts as the PDT 2.0 (Hajič et al. 2006), PDT 2.5 (Bejček et al. 2011), and the Prague Discourse Treebank 1.0 (PDiT 1.0, Poláková et al. 2012). The annotation on the four layers was further fixed ...

### DIRECT DATA CITATIONS

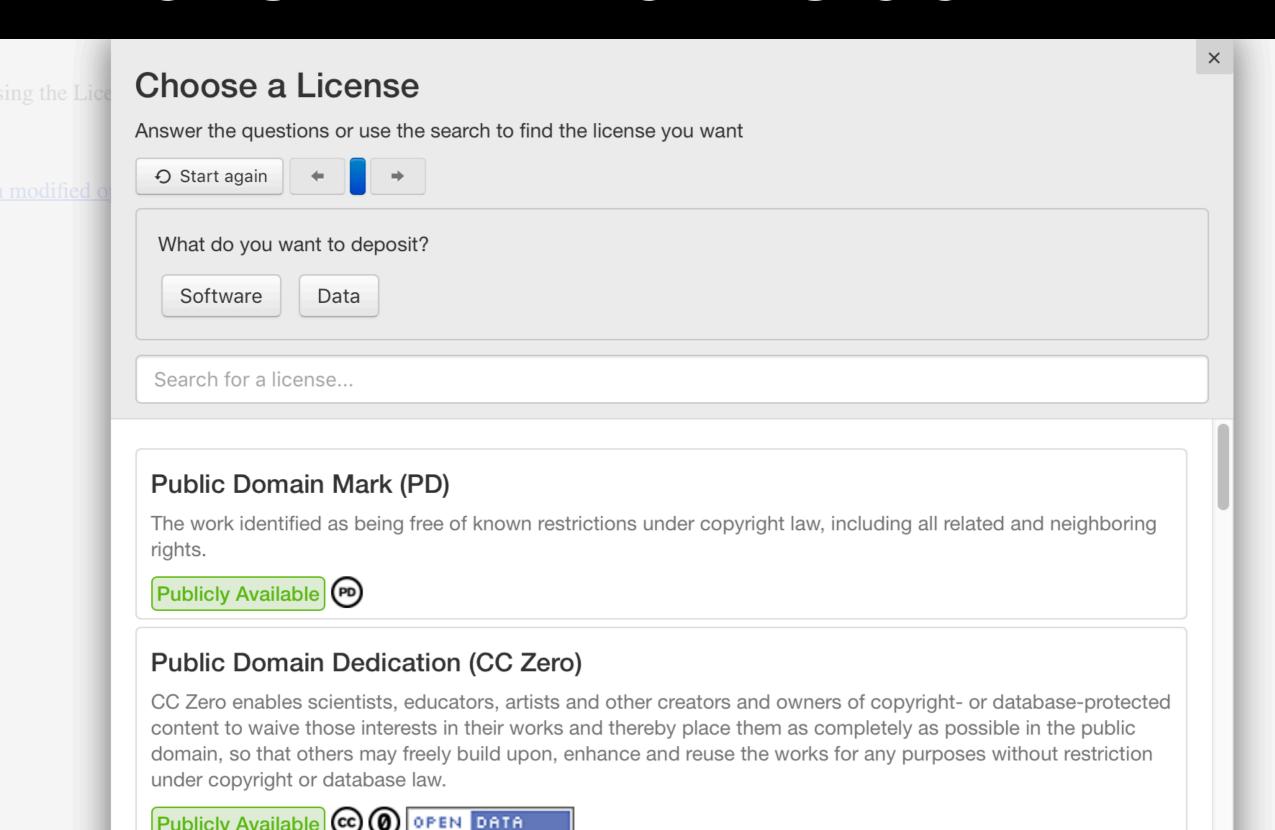


# CREDIT FOR DATA





# AS OPEN AS POSSIBLE



### LICENSING



# AS OPEN AS POSSIBLE (NOT MORE)

Publisher Faculty of Arts, Institute of the Czech National Corpus, Charles University in Prague

Acknowledgement Ministerstvo školství, mládeže a tělovýchovy

Project code: LM2011023

Project name: Český národní korpus

Subject(s) representative corpus written language

♣ Collection(s) LINDAT / CLARIN Data & Tools

Show full item record

® Files in this item



Download instructions for command line

This item is Academic Use and licensed under: Czech National Corpus (Shuffled Corpus Data)



Name syn2015.gz Size 1.48 GB

Format application/x-gzip

**Description** corpus

**MD5** e0242cc77e999794af6cfaf57f843c12

**⊘** Download file



CLEAR RULES
CUSTOM LICENSES
LICENSE SIGNING



# PREFER LATEST, PRESERVE ALL

Project name: Internet jako jazykový korpus

Ministerstvo školství, mládeže a tělovýchovy České republiky

Project code: LN00A063

Project name: Centrum komputační lingvistiky

Ministerstvo školství, mládeže a tělovýchovy České republiky

Project code: MSM 0021620838

Project name: Moderní metody, struktury a systémy informatiky

Subject(s)

MorphoDiTa

Czech

morphological analysis

morphological generation

PoS tagging

♣ Collection(s)

LINDAT / CLARIN Data & Tools



This item is replaced by a newer submission: http://hdl.handle.net/11234/1-1836

Please refer to the submission above for the latest available data. If you nevertheless need the original data, please click here.

List all versions ▼

### VERSIONING



# PREFER LATEST, PRESERVE ALL

The Collection(S)

LINDAT / CLARIN Data & 1001S

**P** Other versions

List all versions ▼

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▶ Czech Models (MorfFlex CZ 161115 + PDT 3.0) for MorphoDiTa 161115

Czech Models (MorfFlex CZ 160310 + PDT 3.0) for MorphoDiTa 160310

Czech Models (MorfFlex CZ + PDT) for MorphoDiTa

Files in this item



Download instructions for command line

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czech-morfflex-pdt-161115.zip Name

Size 69.18 MB

Format application/zip

Czech Models (MorfFlex CZ 161115 + PDT 3.0) for MorphoDiTa 161115 **Description** 

MD5 adde38cd363219759e19165b06baa4ce

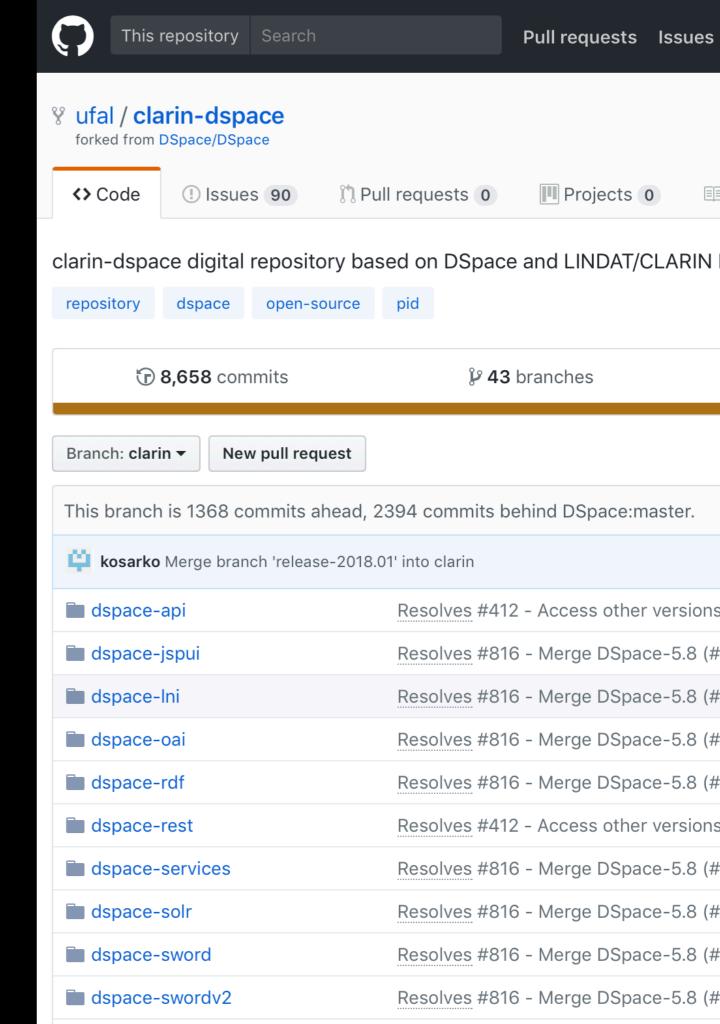
Download file





# REPOSITORY SOFTWARE

- CLARIN-DSpace
  - DSpace + licensing, versioning and more
- LINDAT's project converting to community
- 13 deployments10 countries





# SERVICES

- Web services
  - REST, stable services only
    - open source software, high-standards requirements
- Applications and user services
  - Wrappers around services (web-based applications)
  - Internet Language Reference Book (at Institute for Czech Language)
- "Physical Service": Centre for Visual History Malach
  - Shoah collection access point
  - Reusable audio search technology



# Web Services and Applications

### 20 SERVICE TYPES (WITH 100+ CORPORA/LEXICONS)

### **NameTag**

Please use the following text to cite this item or export to a predefined format:

BIBTEX CMDI

Straka, Milan and Straková, Jana, 2014, NameTag, LINDAT/CLARIN digital library at the Institute of Formal and Applied Linguistics (ÚFAL), Faculty of Mathematics and Physics, Charles University, http://hdl.handle.net/11858/00-097C-0000-0023-43CE-E.







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☑ PROJECT HOME



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PML-Tree Query

PDT-Vallex

EngVallex

CzEngVallex

MorphoDiTa

NameTag

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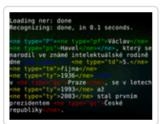


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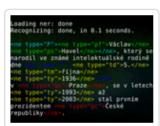


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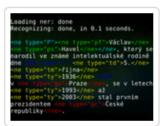
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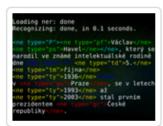
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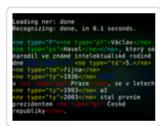
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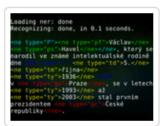


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Repository

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About

CLARIN 🏎

LINDAT/CLARIN / Services / UDPipe

## **UDPipe**

About

**⇔**\* Run

REST API Documentation

UDPipe is a trainable pipeline for tokenization, tagging, lemmatization and dependency parsing of CoNLL-U files. UDPipe is language-agnostic and can be trained given an in CoNLL-U format. Trained models are provided for nearly all UD treebanks. UDPipe is available as a binary for Linux/Windows/OS X, as a library for C++, Python, Perl, Ja as a web service. Third-party R CRAN package also exists.

UDPipe is a free software distributed under the Mozilla Public License 2.0 and the linguistic models are free for non-commercial use and distributed under the CC BY-NC-S although for some models the original data used to create the model may impose additional licensing conditions. UDPipe is versioned using Semantic Versioning.

Copyright 2017 by Institute of Formal and Applied Linguistics, Faculty of Mathematics and Physics, Charles University, Czech Republic.

Description of the available methods is available in the API Documentation and the models are described in the UDPipe User's Manual.

### Service

The service is freely available for testing. Respect the CC BY-NC-SA licence of the models – **explicit written permission of the authors is required for any commercial exploitation of the system**. If you use the service, you agree that data obtained by us during such use can be used for further improvements of the systems at UFAL. All comments and reactions are welcome.

Model:	● UD 2.0 (description) ○ CoNLL17 Baseline UD 2.0 (description) ○ UD 1.2 (description)					
	czech-ud-2.0-170801					
Actions:	✓ Tag and Lemmatize ✓ Parse					
▼ Advanced Options						
	A Input Text	☐ Input File				



A Input Text

Repository

**TreeQuery** 

Treex

More Apps



Input File

LINDAT/CLARIN / Services / UDPipe

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🗱 Run

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### Service

The service is freely available for testing. Respect the CC BY-NC-SA licence of the models – explicit written permission of the authors is required for any commercial exploitation of the system. If you use the service, you agree that data obtained by us during such use can be used for further improvements of the systems at UFAL. All comments and reactions are welcome.



UDPipe is a trainable pipeline for tokenization, tagging, lemmatization and dependency parsing of CoNLL-U files. UDPipe is language-agnostic and can be trained given a in CoNLL-U format. Trained models are provided for nearly all UD treebanks. UDPipe is available as a binary for Linux/Windows/OS X, as a library for C++, Python, Perl, as a web service. Third-party R CRAN package also exists.

UDPipe is a free software distributed under the Mozilla Public License 2.0 and the linguistic models are free for non-commercial use and distributed under the CC BY-NC-although for some models the original data used to create the model may impose additional licensing conditions. UDPipe is versioned using Semantic Versioning.

### Copyright 2017 by Institute of Formal and Applied Linguistics, Faculty of Mathematics and Physics, Charles University, Czech Republic. Description of the available methods is available in the API Documentation and the models are described in the UDPipe User's Manual. Service The service is freely available for testing. Respect the CC BY-NC-SA licence of the models – explicit written permission of the authors is required for any commer exploitation of the system. If you use the service, you agree that data obtained by us during such use can be used for further improvements of the systems at UFAL. comments and reactions are welcome. UD 2.0 (description) CoNLL17 Baseline UD 2.0 (description) UD 1.2 (description) Model: english-ud-2.0-170801 Tag and Lemmatize Parse Actions: Advanced Options Input File A Input Text In the first place I hope you will live twenty-three years longer. Mr. Tom Lefroy's birthday was yesterday, so that you are very near of an age. After this necessary preamble I shall proceed to inform you that we had an exceeding good ball last night, and that

After this necessary preamble I shall proceed to inform you that we had an exceeding good ball last night, and that I was very much disappointed at not seeing Charles Fowle of the party, as I had previously heard of his being invited. In addition to our set at the Harwoods' ball, we had the Grants, St. Johns, Lady Rivers, her three daughters and a

In the first place I hope you will live twenty-three years longer. Mr. Tom Lefroy's birthday was yesterday, so that you are very near of an age.

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◆ Process Input ◆								
	A Output Text			⊞ Show Table		<b>♣</b> Show	Trees	
♣ Save Output File								
ld Form	Lemma	UPosTag	XPosTag	Feats	Head	DepRel	Deps	Misc
# newdoc								
# newpar								
# sent_id = 1								
# text = In the first place I hope you will live twenty-three years longer.								
1 In	in	ADP	E	_	4	case	_	_
2 the	the	DET	RD	Definite=DeflPronType=Art	4	det	_	_
3 first	first	ADJ	NO	Degree=PoslNumType=Ord	4	amod	_	_
4 place	place	NOUN	S	Number=Sing	6	obl	_	_
5 I	I	PRON	PE	Number=SinglPerson=1lPronType=Prs	6	nsubj	_	_
6 hope	hope	VERB	V	Mood=IndlNumber=SinglPerson=1lTense=PreslVerbForm=Fin	0	root		



Input File

In the first place I hope you will live twenty-three years longer. Mr. Tom Lefroy's birthday was yesterday, so that you are very near of an age.

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A Output Text

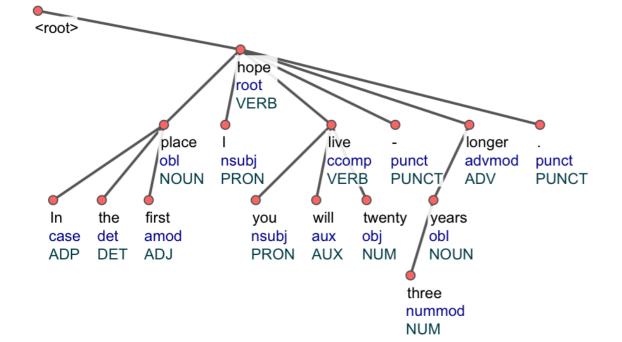
**■** Show Table

**♣** Show Trees

★ Save Tree as SVG

Previous 1 2 3 4 5 6 7 8 9 10 11 12 ... Next

In the first place I hope you will live twenty - three years longer .



LINDAT/CLARIN / Services / UDPipe

## **UDPipe**

About

🗱 Run

■ REST API Documentation

UDPipe web service is available on <a href="https://lindat.mff.cuni.cz/services/udpipe/api/">http(s)://lindat.mff.cuni.cz/services/udpipe/api/</a>.

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### **API** Reference

The UDPipe REST API can be accessed directly or via any other web programming tools that support standard HTTP request methods and JSON for output handling.

Service Request	Description	HTTP Method
models	return list of models and supported methods	GET/POST
process	process supplied data	GET/POST

### Method models

Return the list of models available in the UDPipe REST API, and for each model enumerate components supported by this models (model can contain a tokenizer, tagger and a parser). The default model (used when user supplies no model to a method call) is also returned – this is guaranteed to be the latest Czech model.

### **Browser Example**

http://lindat.mff.cuni.cz/services/udpipe/api/models

try this

### **Example JSON Response**

```
"models": {
"czech-ud-1.2-160523": ["tokenizer", "tagger", "parser"],
"english-ud-1.2-160523": ["tokenizer", "tagger", "parser"]
"default model": "czech-ud-1.2-160523"
```

### Method process

The response is in JSON format of the following structure:

```
{
  "model": "Model used",
  "acknowledgements": ["URL with acknowledgements", ...],
  "result": "processed_output"
}
```

The <a href="mailto:processed\_output">processed\_output</a> is the output of the UDPipe in the requested output format.

### **Browser Examples**

http://lindat.mff.cuni.cz/services/udpipe/api/process?tokenizer&tagger&parser&data=Děti pojedou k babičce. Už se těší.

try this

### Model Selection

There are several possibilities how to select required model using the model option:

- If model option is not specified, the default model (returned by models method) is used this is guaranteed to be the latest Czech model.
- The model option can specify one of the models returned by the models method.
- The model option may be only several first words of model name. In this case, the latest most suitable model is used.
- The model can be ISO 639-1 or ISO 639-2 code of a language. If available, newest model for the requested language is used.
- 1 Note that the last two possibilities allow using czech, cs, ces, cze, english, en or eng as models.

### Accessing API using Curl

The described API can be comfortably used by **curl** . Several examples follow:

### Passing Input on Command Line (if UTF-8 locale is being used)

```
curl --data 'tokenizer=&tagger=&parser=&data=Děti pojedou k babičce. Už se těší.' http://lindat.mff.cuni.cz/services/udpipe/api/process
```

### Using Files as Input (files must be in UTF-8 encoding)

```
curl -F data=@input_file.txt -F tokenizer= -F tagger= -F parser= http://lindat.mff.cuni.cz/services/udpipe/api/process
```

### **Specifying Model Parameters**

```
curl -F data=@input_file.txt -F model=english -F tokenizer= -F tagger= -F parser= http://lindat.mff.cuni.cz/services/udpipe/api/process
```

### Converting JSON Result to Plain Text

```
curl -F data=@input_file.txt -F model=english -F tokenizer= -F tagger= -F parser= http://lindat.mff.cuni.cz/services/udpipe/api/process | PYTHONIOENCODING=utf-8 python -c "import sys,json; sys.stdout.write(json.load(sys.stdin)['result'])"
```



- Preservation and dissemination of language data
- Creation of linguistic datasets
- Creation of language processing tools
- Language processing services
- Search interfaces for language datasets: corpora, dictionaries, audio-visual data
- Support in utilising all of this for your research



- http://lindat.cz (http://ufal.mff.cuni.cz/lindat)
- https://lindat.mff.cuni.cz/en/services
- http://hdl.handle.net/
   11858/00-097C-0000-0023-8BD2-2
   (http://prirucka.ujc.cas.cz/)
- http://malach-centrum.cz

# Thank you!

http://lindat.cz



