CzeSL-SGT – a corpus of non-native speakers’ Czech with automatic annotation

The CzeSL-SGT corpus (Czech as a Second Language with Spelling, Grammar and Tags) includes transcription of essays written by non-native speakers of Czech, extending the “foreign” (ciz) part of the CzeSL-plain corpus (http://ucnk.ff.cuni.cz/english/czesl-plain.php) by texts collected in 2013. For more details see §1.

Word forms are tagged by word class, morphological categories and base forms (lemmas). Some forms are corrected and the resulting texts are tagged again. Original and corrected forms are compared and error labels are assigned. The annotation is assigned automatically, which necessarily results in some inaccuracy and error rate. For details see §2.

Most texts are equipped with metadata about the author and the text. See §3 for details.

The corpus is available either for on-line searching using the search interface of the Czech National Corpus (https://kontext.korpus.cz/run.cgi?first?corpname=czesl-sgt), see §3.3, or for download as a whole from the LINDAT data repository (http://hdl.handle.net/11234/1-162), see §3.4. The corpus is currently in Release 2. Some bugs present in the original release have been fixed and the version downloadable from LINDAT differs also in the format – the whole corpus is now a single XML document, where all annotation is represented as XML attributes.

For more about the CzeSL learner corpus and AKCES, the more general project of acquisition corpora, see http://utkl.ff.cuni.cz/learncorp/ and http://akces.ff.cuni.cz/ The sites include bibliography lists. For more recent papers, see, e.g., Rosen et al. (2014), Stindlová et al. (2013), Jelinek et al. (2012).

1 Choice of texts

- Transcripts of essays of non-native speakers of Czech, written in 2009–2013
- Extends the ciz part of the CzeSL-plain corpus (http://ucnk.ff.cuni.cz/czesl-plain.php) by texts written in 2013
- 8,617 texts by 1,965 different authors with 54 different first languages
- 111 thousand sentences, 958 thousand words, 1 148 thousand tokens
- Without transcription markup, with the final author’s version restored

2 Annotation

Each token is labelled by the following attributes:

- word – original word form
- lemma – lemma of word; same as word if the form is not recognized
- tag – morphological tag of word; if the form is not recognized: X@---------------
- word1 – corrected form; same as word if determined as correct
- lemma1 – lemma of word1
- tag1 – morphological tag of word1
- gs – information on whether the error was determined as a spelling (S) or grammar (G) error; for grammar errors, word is mostly recognized
- err – error type, determined by comparing word and word1 [http://utkl.ff.cuni.cz/~rosen/public/SeznamAutoChybR0R1_en.html]
In addition to the attributes listed above, the search interface of the Czech National Corpus offers “dynamic” attributes, derived from some positions of tag and tag1. They can be used in queries to specify values of morphological categories without regular expressions, to stipulate identity of these values in two or more forms to require grammatical concord or to compare values of a category for word and word1. These attributes are available for the following categories of the original and the corrected form:

- k, k1 – word class (position 1 of the tag)
- s, s1 – detailed word class (position 2 of the tag)
- g, g1 – gender (position 3 of the tag)
- n, n1 – number (position 4 of the tag)
- c, c1 – case (position 5 of the tag)
- p, p1 – person (position 8 of the tag)


The texts are anonymized by replacing personal names with appropriate forms of Adam and Eva. Names of smaller places (streets, villages, small towns) and other potentially sensitive data are replaced by QQQ. Unreadable characters or words are transcribed as XXX.

3 Metadata

Metadata are available for the new and for most of the old texts: 15 items about the author of the text and 15 items about the text itself. For a list of all attributes and values in Czech and English see http://utkl.ff.cuni.cz/~rosen/public/meta_attr_vals.html. The numbers of documents, listed according to specific attribute values, are given here: http://utkl.ff.cuni.cz/~rosen/public/sgt_counts_by_meta_en.html. The content of the individual items is explained below in §3.1 and §3.2.

Some or even all items may be missing for some texts: identification of the author is present in 96.7% texts, the first language in 96.3% texts. Missing items are represented as empty values. Some attributes may include multiple values, delimited by vertical bar (“|”).

Metadata are available in Czech and English. The Czech National Corpus site offers the Czech version, while the LINDAT data repository offers the entire corpus using their English version.

All the items are attributes of the doc element.

3.1 Data about the author of the text (the student)

- s_id – identification; a single value: character string, e.g. TOU_H305
- s_sex – sex; one of the values:
  - m – male
  - f – female
- s_age – age; a single value: integer
• `s_age_cat` – age category; one of the values:
  - 6-11; 12-15; 16-

• `s_L1` – first language; one of the values: two-character code according to the standard ISO 639-1, e.g. sq (Albanian); or three-character code ISO 639-3 if necessary, e.g. xal (Kalmyk) or bem (Bemba), see [http://en.wikipedia.org/wiki/List_of_ISO_639-1_codes](http://en.wikipedia.org/wiki/List_of_ISO_639-1_codes) and [http://en.wikipedia.org/wiki/ISO_639-3](http://en.wikipedia.org/wiki/ISO_639-3).

• `s_L1_group` – language group according to the first language; one of the values:
  - IE – Indo-European non-Slavic
  - nIE – non-Indo-European
  - S – Slavic

• `s_other_langs` – knowledge of other languages; one or more of the values:
  ISO code (see `s_L1`)

• `s_cz_CEF` – proficiency in Czech at the time of writing; one of the values:
  - A1; A1+; A2; A2+; B1; B2; C1; C2

• `s_cz_in_family` – knowledge of Czech in the family; one or more of the values:
  - mother; father; partner; sibling; 3 (3 family members); other; nobody

• `s_years_in_CzR` – length of stay in the Czech Republic in years; one of the values:
  - -1; 1; -2; 2-

• `s_study_cz` – past or present study; one or more of the values:
  - 1to1 – individual tutoring
  - paid
  - TY – self-study
  - university
  - foreign
  - primary-secondary
  - other

• `s_study_cz_months` – length of study of Czech in months; one of the values:
  - -3; 3-6; 6-12; 12-24; 24-36; 36-48; 48-60; 60-

• `s_study_cz_hrs_week` – intensity of study of Czech in hours per week; one of the values:
  - -3; 5-15; 15-

• `s_textbook` – textbook used in the past or present by the student; one or more of the values:
  - BC – Basic Czech
  - CC – Communicative Czech
  - CE – Čeština pro ekonomy
  - CMC – Cheote mluvit češky?
  - CpC – Čeština pro cizince
  - ECE – Easy Czech Elementary
  - NCSS – New Czech Step by Step
  - other

• `s_bilingual` – bilingual; one of the values:
  - yes; no
3.2 Data about the text

- **t_id** – identification; a single value: character string, e.g. TOU_H305_442
- **t_date** – date of the text collection; a single value: date in the format YYYY-MM-DD
- **t_medium** – medium of the text; one of the values:
  - manuscript; pc
- **t_limit_minutes** – time limit for writing the text in minutes; one of the values:
  - 10; 15; 20; 30; 40; 45; 60; other; none
- **t_aid** – permitted aid; one or more of the values:
  - ano; dictionary; textbook; other; none
- **t_exam** – was the text written as a part of an exam?; one or more of the values:
  - yes; interim; final; n/a
- **t_limit_words** – size limit in the assignment; one of the values:
  - 20; 20-; 25; 30; 35-; 40; 40-; 50; 50-; 60; 60-; 70; 70-; 80; 80-; 90; 90-; 100; 100-; 120; 120-; 150; 150-; 170; 180; 200; 200-
- **t_title** – title of the essay; one or more values: character string, e.g. Událost, která změnila můj život
- **t_topic_type** – type of the topic; one of the values:
  - general; specific
- **t_activity** – activity before writing the text; one of the values:
  - exercise; discussion; visual; vocabulary; other; none
- **t_topic_assigned** – topic specified in the assignment; one of the values:
  - multiple choice; specified; free; other
- **t_genre_assigned** – genre specified in the assignment; one of the values:
  - free; specified
- **t_genre_predominant** – genre predominant in the resulting text; one of the values:
  - informative; descriptive; argumentative; narrative
- **t_words_count** – actual number of words; a single value: integer
- **t_words_range** – range of the actual number of words; one of the values:
  - -50; 100-149; 150-199; 200-; 50-99

3.3 Searching the corpus

The corpus can be searched from the unified search interface of the Czech National Corpus (https://kontext.korpus.cz/run.cgi/first?corpname=czesl-sgt). The czesl-sgt corpus is in the category learner, synchronic, written and Czech. With the Query Type set to Basic and no other specifications, a string entered in the Query field returns sentences where the form occurs in the original, uncorrected text. For more advanced queries, including references to tags, lemmas, error types, corrected forms and metalanguage attributes, the Query Type should be set to CQL and/or the settings in Specify query according to the meta-information modified. For general help on using CQL see http://www.sketchengine.co.uk/documentation/wiki/SkE/CorpusQuerying.
### 3.4 Format of the texts

This part is relevant for whole texts, available from the LINDAT repository.

Data about the text and sentences are represented as XML elements with corresponding attributes. In Release 1 ([http://hdl.handle.net/11858/00-097C-0000-0023-95B1-E](http://hdl.handle.net/11858/00-097C-0000-0023-95B1-E)) the text itself is represented in tab-delimited columns, in the order shown in Table 1. A sample text is shown below.

```xml
<doc t_id="UJA2_PH_003" t_date="2010-12-21" t_medium="manuscript" t_limit_minutes="45" t_aid="none" t_exam="yes|interim" t_limit_words="25" t_title="E-mail kamarádce/kamarádovi" t_topic_type="general" t_activity="" t_topic_assigned="specified" t_genre_assigned="specified" t_genre_predominant="informative" t_words_count="50" t_words_range="-50" s_id="UJA2_PH" s_sex="m" s_age_cat="16-" s_L1="vi" s_L2="cs" s_other_langs="" s_cz_SR="A1" s_cz_in_family="" s_years_in_CzR="" s_study_cz="university" s_study_cz_menster="" s_study_cz_hrs_week="15-" s_textbook="NCSS" s_bilingual="no">
<s id="1">
  mám mít VB-S---1P-AA--- mám mít VB-S---1P-AA---
  dobře dobře Dg-------1A---- dobře dobře Dg-------1A----
  . . Z:------------- . . Z:-------------
</s>
<s id="2">
  V v RR--4-------- V v RR--4--------
  neděle neděle NNFS4------A---- neděle neděle NNFS4------A----
  díval dívat VB-S---1P-AA--- díval dívat VpYS------XR-AA--- S Quant0
  jsem byt VB-S---1P-AA--- jsem byt VB-S---1P-AA---
  se se P7-X4-------- se se P7-X4--------
  na na RR--6-------- na na RR--6--------
  televizí televize NNFS6------A---- televizí televize NNFS6------A----
  a a J^------------- a a J^-------------
  uklízel uklízet VB-X------XR-AA--- S Quant0|Caron1
  jsem byt VB-S---1P-AA--- jsem byt VB-S---1P-AA---
  . . Z:------------- . . Z:-------------
</s>
<s id="3">
  Ano ano TT------------- Ano ano TT-------------
  přijedu přijít VB-S---1P-AA--- přijedu přijít VB-S---1P-AA---
  se se P7-X4-------- se se P7-X4--------
  tebe ty PP-S2---2------- tebe ty PP-S2---2-------
  do do RR--2-------- do do RR--2--------
  kina kino NNNS2------A---- kina kino NNNS2------A----
  a a J^------------- a a J^-------------
  taky taky Db-------------- taky taky Db--------------
  mám mít VB-S---1P-AA--- mám mít VB-S---1P-AA---
  čas čas NNIS4------A---- čas čas NNIS4------A----
  jen jen TT------------- jen jen TT-------------
  večeř večeř Db-------------- večeř večeř Db--------------
  . . Z:------------- . . Z:-------------
</s>
<s id="4">
  Tvoje tvůj PSHS1-S2------ Tvoje tvůj PSHS1-S2------
  kamarád kamarád NNMS1------A---- kamarád kamarád NNMS1------A----
  . . Z:------------- . . Z:-------------
</s>
</doc>
```

In Release 2 ([http://hdl.handle.net/11234/1-162](http://hdl.handle.net/11234/1-162)) the whole corpus is an XML document with each text as a `div` element. Annotation of each word is represented as XML attributes of a `word` element:

```xml
<word lemma="dival" tag="X@-------------" word1="díval" lemma1="dívat"
tag1="VpYS------XR-AA---" gs="S" err="Quant0">dival</word>
```

### 4 Acknowledgment

There would not be any corpus like this without the efforts of many students of Czech, and, indeed, without the devoted collectors and transcribers of texts. Collection and transcription of new data and metadata, including
extensive search of metadata for the original texts, was performed and coordinated by Kateřina Lundáková with a significant help by Dagmar Toufarová.

We are grateful to everyone who helped to build the tools needed for tagging and lemmatization of Czech (Hajič (2001), Votrubec (2006)), to Michal Richter and Milan Straka for the spelling and grammar checker (Richter (2010), Richter et al. (2012)), and to Tomáš Jelíněk for the tool assigning error labels (Jelíněk et al. (2012)).

Many thanks are due to Pavel Procházka, whose generous help was crucial for the final technical stages, and Hana Skoumalová, who was the patient advisor for all technical problems.

The lion’s share of merit gets Karel Šebesta as the instigator and leader of the whole enterprise. However, the result would not occur without the support and motivation of Barbora Štindlová, Svatava Škodová and Jirka Hana.

The work was supported in 2009–2012 from the European Structural Funds grant Innovation in the Education of Czech as a Second Language, reg. no. CZ.1.07/2.2.00/07.0119 with the published CZESL-PLAIN corpus as a main result; new acquisitions, transcriptions, the provision of metadata and other work related to CZESL-SGT from PRVOUK, the research funding programme at Charles University: P10 – Linguistics, Acquisition and Development of Linguistic and Communicative Competence in Selected Communities of the Czech Republic and from the project Czech National Corpus, supported by the Ministry of Education of the Czech Republic as a part of the Projects of Large Infrastructures for Science, Research and Innovations (2012-2015, project no. LM2011023).

References


Alexandr Rosen, 27 July 2014, updated 7 October 2015