NTNU

Innovation and Creativity

The Norwegian ‘Grammar Sparrer’ (tutor)

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The Norwegian Online Grammar Sparrer is an online language training tool developed at NTNU, with an indirect access point via

http://typecraft.org/tc2wiki/A_Norwegian_Grammar_Sparrer

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- which provides a general setting and references to various resources on Norwegian, and as direct access point

http://129.241.111.247:8080/norsource/parseStudent .

As of November 2011, it can also be reached via a button ‘Grammar checker’ on each chapter page of the web-based L2 course NoW at NTNU:

http://www.ntnu.edu/now .

A Norwegian Grammar

typecraft.org/tc2wiki/A_Norwegian_Grammar_Sparrer

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A Norwegian Grammar Sparrer

The first small steps in learning a new language reside in mastering the patterns of small sentences and small constructions. The mastery grows partly from recognizing what are the admitted patterns, partly from *using* these patterns over and over again until they sit in one's backbone. When learning a language as a 'second' language, the **Grammar Sparrer** provides you with a limited 'use' environment in which you can get feedback on linguistic patterns of your choice, with repetition and variations and explorations in exactly the directions you want. On clicking on the icon below, you will come to the Sparrer:

Instructions for its use are found at Classroom:Norwegian Grammar Checking

For each expression you type into the Sparrer, you get a response as to whether the string belongs to an admitted pattern, and if not, the Sparrer may tell you what you did wrong. With the facilities of the Grammar Sparrer, you can repeat the same or partly the same material as much as you like, and you can impose ever new variations in the patterns as you like. With intensive sessions, you can both explore and drill the basic patterns of the language.

Behind this Sparrer is a computational grammar of Norwegian, with the sparring function as one of its applications. The 'advices' given are derived from the rules that the grammar applies in order to retract how a string conforms to the language (i.e., when it *parses* the string). Information about the grammar and its present application can be found at Norwegian HPSG grammar NorSource.

The phenomena for which the Sparrer provides feedback messages are found at Grammar sparring phenomena.

For an overview of current feedback messages, go to Feedback messages.

--Lars Hellan 21:15, 11 September 2011 (UTC)

typecraft.org/w/index.php?title=A_Norwegian_Grammar_Sparrer&action=protect

NorMal

- The system has been created by *Lars Hellan*, *Tore Bruland*, *Elias Aamot* and *Mads Hustad Sandøy*, with ample assistance by Dan Flickinger, starting late in 2010, throughout 2011 and till now, and builds on the computational grammar ***NorSource*** of Norwegian, developed at NTNU since 2001 (see http://typecraft.org/tc2wiki/Norwegian_HPSG_grammar_NorSource). A 'mal-apparatus' is built onto this 'bon'-grammar, together constituting the full system 'NorMal'. (Thus, all files of Norsource are used in NorMal, while NorMal includes files not used in Norsource.)
- For accommodating the sparrer in the TypeCraft web interface, *Dorothee Beermann* has offered crucial assistance.

The Procedure

- For each error sentence, a *recommendation* is generated from the MRS of the NorMal-parsed sentence.
- Both mal-rules and mal-lexical entries introduce into the MRS exactly the same EP(s) as their ’bon’-counterparts generally introduce, whereby generation can produce well-formed strings coming very close to the intended form.
- To enable this, parsing has been done in PET, and generation in LKB. During the last half year we have taken into use ACE, integrated by Tore Bruland, increasing speed by a significant factor. (Remote assistance by Woodley Packard and Dan Flickinger has been greatly appreciated.) The functionalities are now shown:

Phenomena

- (there are currently around 150 such messages divided into 40 main types, illustrated on http://typecraft.org/tc2wiki/Feedback_messages) Below is a list of error messages and examples of the types of mal-formed strings they address:

- The word "og" is not the infinitival marker, try using "å" instead.
- "*Jeg prøver og komme*."
- The word "å" is not a conjunction, try using "og" instead.
- "*Ola å Per kommer*."
- The reflexive pronoun "seg" does not match the number and gender of the word it refers back to. Try using "meg"
- "*Jeg skammer seg*."

Phenomena

- The sentence lacks subject-verb inversion.
- "*Imorgen jeg kommer*."
- The sentence contains an incorrect subject-verb inversion.
- "*Kommer jeg snart*."
- The word "like" is in infinitive, but should be put in past or present tense.
- "*Jeg like fisken*."
- The word "prøvde" is in the past tense, but should be in infinitive.
- "*Jeg prøvde å gikk*."
- The word "hus" is of neuter gender, not masculine.
- "*Husen er gult*."
- The adjective "gult" is conjugated as neuter gender, but modifies a masculine or feminine noun.
- "*En gult bil stod her*."
- The adjective "gul" is conjugated as singular, but modifies a plural noun.
- "*De gul bilene står her*."

Phenomena

- The verb "prøvde" must be followed by the infinitive marker "å".
- "*Jeg prøvde komme*."
- There should always be a verb in the sentence. Try using "er" or "var" before the phrase "snill".
- "*Hun snill*."
- Past perfective tense requires an auxiliary verb "å ha" in addition to the past participle "kommet".
- "*Jeg kommet*."
- Passive mode requires an auxiliary verb "å bli" in addition to the past participle "skutt".
- "*Presidenten skutt*."
- In main clauses, sentential adverbs, such as "ikke", must be placed directly after the finite verb, before any objects.
- "*Jeg spiste fisken ikke*."
- The verb " fortærer " requires an object.
- "*Jeg fortærer*."
- The verb "traff" requires a subject, like all finite verbs in Norwegian.
- "*Traff Peter*."
- The verb "skammer" requires a reflexive object.
- "*Jeg skammer*."

Phenomena

- A possessive "s" is required after "Ola" to specifiy a possessive relation.
- "*Ola hus er gult*."
- The noun following the verb "liker" should not be introduced by a preposition.
- "*Jeg liker på Ola*."
- The noun following the verb "stole" should always be introduced by a preposition.
- "*Jeg stoler Ola*."
- The word "sammen" should not be followed by "med" in this context.
- "*Vi går sammen med*."
- The verb "oppføre (seg)" requires that the object is not followed by "selv".
- "*Ola oppfører seg selv pent*."
- A definite noun which is modified by an adjective, such as "snille", should have a determiner preceding the adjective.
- "*Snille gutten sover*."
- The determiner "et" must have the same gender, number and definiteness as the noun it modifies.
- "*Et mann sover*."

Outlooks

Conceivable further designs may include:

- - a facility for paragraph writing, where a paragraph is built up sentence by sentence, each sentence checked both for grammaticality and suitedness relative to its place in the paragraph;
- - a facility for 'batch' responses, i.e., that the user submits a set of sentences at the same time, and get simultaneous feedback to all of them, thereby having a better opportunity to detect patterns in the data;
- - a facility for user-communication to the system in general, and in particular for informing about language background, paired with a possibility for the system to keep a log of which sentences are submitted by which user, thereby making possible a forming of profiles of user's native-language paired with error patterns.

- Among the visions of a ‘Multilingual Europe’ in the EU-prospect ‘Horizon 2020’ is the increased use of e-Learning facilities to enhance multilingual competence, acknowledging the limits of automatic translation as a means of bridging across languages. What we here call **On-line Grammar Sparrers** (OGS) are devices embodying a very simple concept of an automated learning environment. The particular design and implementation here in question has so far just two instantiations, for English and for Norwegian, but the underlying resources needed are in place for 3-4 more languages. An EU-initiative around this application could therefore be envisaged.

References

- Bender, E. M., D. Flickinger, S. Oepen and A. Walsh (2004). "Arboretum: Using a precision grammar for grammar checking in CALL," in Proceedings of the InSTIL/ICALL Symposium 2004, Venice, Italy.
- Copestake, A. 2002. *Implementing Typed Feature Structure Grammars*. CSLI Publications, Stanford.
- Copestake, A., D. Flickinger, C. Pollard, and I. Sag. 2005. Minimal Recursion Semantics: an Introduction. *Research on Language and Computation* 3(4): 281—332.
- Heift, T., and M. Schulze. 2007. *Errors and Intelligence in Computer-Assisted Language Learning: Parsers and Pedagogues.* Routledge, New York.
- Schneider, D. and K. McCoy (1998). "Recognizing Syntactic Errors in the Writing of Second Language Learners," in Proceedings of Coling-ACL, pp. 1198-1204, Montreal.