

## Judging Grammaticality: Experiments in Sentence Classification

Joachim Wagner 2009-07-01

## Outline

- Problem setting and motivation
- Previous work
  - Precision grammars
  - Learning patterns
- Our methods
  - Machine learning
  - Robust treebank grammar
  - Grammar induced from ungrammatical treebank

## Problem

```

graph TD
  Sentence --> Classifier
  Classifier --> Grammatical[😊 Grammatical]
  Classifier --> Illformed[😞 Ill-formed]
  
```

## Areas of Application

- First step towards grammar checking
  - Obligatory and implicit sub-task
  - Word processing
  - Computer-assisted language learning
    - Native speakers vs. 2<sup>nd</sup> language learners
  - Sentence-level checking may be sufficient for some users
- Automatic essay scoring
- Natural language generation
- Ranking machine translation output
- Watermarking of documents
- Supporting annotators

## Precision Grammar Approach

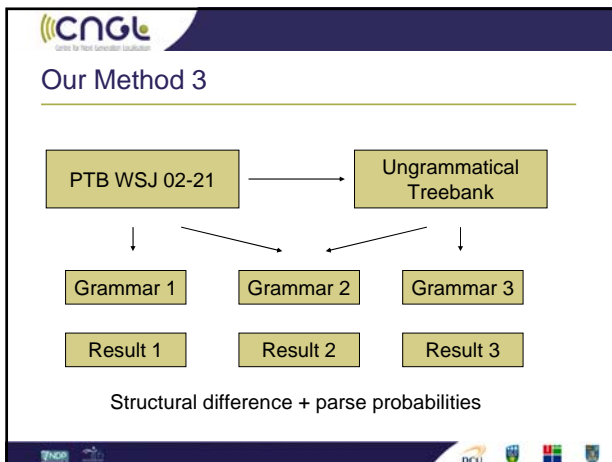
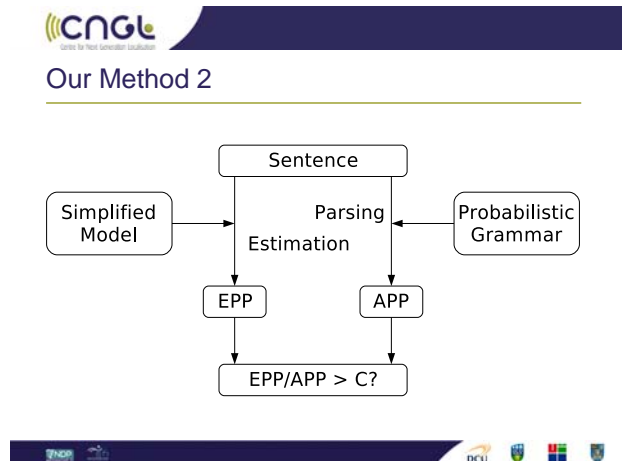
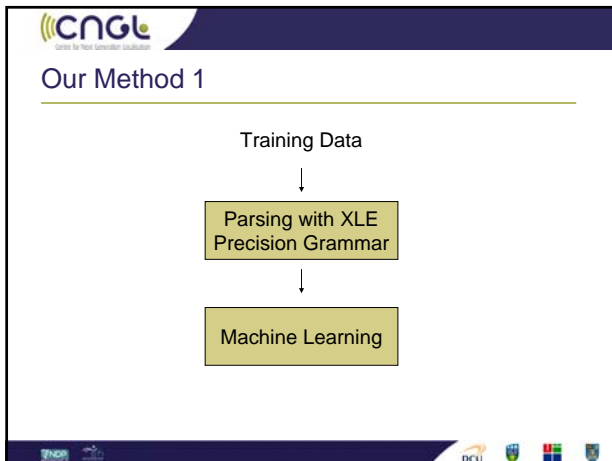
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graph TD
  S1[Sentence] -- Set Membership --> YN1[Yes/No]
  G[Grammar] -- defines --> FL[Formal Language]
  FL --> YN1
  S2[Sentence] -- Parsing --> YNS[Yes+Structure or No]
  G --> YNS
  
```

## Learning Patterns

```

graph TD
  TD[Training Data] --> ANLP[Annotation with NLP Tools]
  ANLP --> ML[Machine Learning]
  
```



**Questions?**

- Joachim Wagner, Jennifer Foster and Josef van Genabith (2009): Judging Grammaticality: Experiments in Sentence Classification. In *CALICO Journal*, pages 474-490, volume 26, number 3
- Jennifer Foster, Joachim Wagner, and Josef van Genabith (2008): Adapting a WSJ-Trained Parser to Grammatically Noisy Text. In *Proceedings of the 46th Annual Meeting of the Association for Computational Linguistics: Human Language Technologie, Short Papers*, pages 221-224, Columbus, OH, June 15-20, 2008
- Joachim Wagner, Jennifer Foster and Josef van Genabith (2007): A Comparative Evaluation of Deep and Shallow Approaches to the Automatic Detection of Common Grammatical Errors. In *Proceedings of the 2007 Joint Conference on Empirical Methods in Natural Language Processing and Computational Natural Language Learning (EMNLP-CoNLL)*, Prague, June 28-30, 2007

**Questions**

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