Russian Computational Linguistics: Topical Structure in 2007-2017 Conference Papers

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Aim and Contribution

Part of a larger project to analyze Russian NLP publishing activity (RusNLP).

- Analysis of Russian NLP publications topical structure and topical drift (for papers written in English):
  - between venues;
  - diachronically (2007-2017).
- A large dataset of papers published at Russian NLP venues
  - considerable amount of metadata, available in a machine-readable format

Setup

- 3 primary Russian NLP venues;
  1. AINL;
  2. AIST;
  3. Dialogue.
- More than 1700 papers were manually assessed to parse metadata;
- LDA with varying hyperparameters was trained on this dataset to extract the topics.

Web service is available at http://nlp.rusvectores.org (work in progress!).

Primary Findings

Not surprising:

1. Dialogue is a more linguistically-oriented event, while AIST and AINL are more computer science oriented;
2. The trending topics of the Russian NLP in general are determined by the central topics of 'Dialogue';
3. The overall topical structure is shifting towards machine learning domain.

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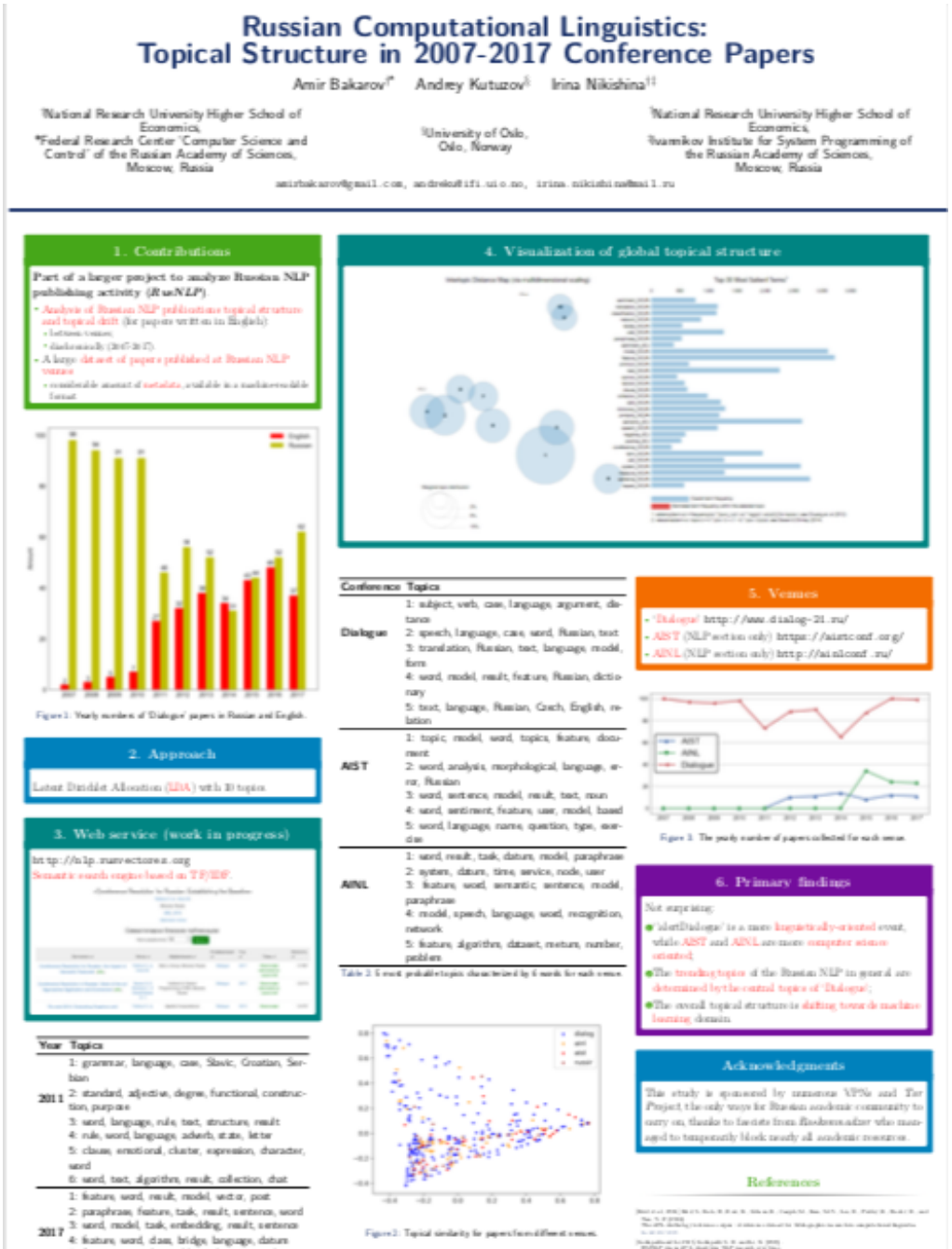

Russian Computational Linguistics: Topical Structure in 2007-2017 Conference Papers

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1. Contributions

Part of a larger project to analyze Russian NLP publishing activity (*RuNLP*)

- Analysis of Russian NLP publications' topical structure and topical drift (for papers written in English)
  - between venues;
  - diachronically (2007-2017).
- A large dataset of papers published at Russian NLP venues
  - considerable amount of metadata, available in a machine-readable format.

Figure 1: Yearly numbers of 'Dialogue' papers in Russian and English.

2. Approach

Latent Dirichlet Allocation (LDA) with 10 topics

3. Web service (work in progress)

http://nlp.rusvectores.org

Semantic search engine based on TF/IDF.

Year	Topics
2011	1: grammar, language, case, Slavic, Croatian, Serbian 2: standard, adjective, degree, functional, construction, purpose 3: word, language, rule, text, structure, result 4: rule, word, language, adverb, state, letter 5: clause, emotional, cluster, expression, character, word 6: word, text, algorithm, result, collection, chat
2017	1: feature, word, result, model, vector, pos 2: paraphrase, feature, task, result, sentence, word 3: word, model, task, embedding, result, sentence 4: feature, word, class, bridge, language, dataset

4. Visualization of global topical structure

Conference	Topics
Dialogue	1: subject, verb, case, language, argument, distance 2: speech, language, case, word, Russian, text 3: translation, Russian, text, language, model, form 4: word, model, result, feature, Russian, dictionary 5: text, language, Russian, Czech, English, relation
AIST	1: topic, model, word, topics, feature, document 2: word, analysis, morphological, language, error, Russian 3: word, sentence, model, result, text, noun 4: word, sentiment, feature, user, model, based 5: word, language, name, question, type, exercise
AINL	1: word, result, task, dataset, model, paraphrase 2: system, dataset, time, service, node, user 3: feature, word, semantic, sentence, model, paraphrase 4: model, speech, language, word, recognition, network 5: feature, algorithm, dataset, measure, number, problem

Table 2: 5 most probable topics characterized by 6 words for each venue.

Figure 2: Topical similarity for papers from different venues.

5. Venues

- 'Dialogue' http://www.dialog-21.ru/
- AIST (NLP section only) https://aistconf.org/
- AINL (NLP section only) http://ainlconf.ru/

Figure 3: The yearly number of papers collected for each venue.

6. Primary findings

Not surprising:

- 'dialogue' is a more linguistically-oriented event, while AIST and AINL are more computer science oriented;
- The trending topics of the Russian NLP in general are determined by the central topics of 'Dialogue';
- The overall topical structure is shifting towards machine learning domain.

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References

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Thank you for your attention!

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