

Dr. Ilia Markov
Curriculum Vitae



Postdoctoral researcher
Centre for Computational Linguistics and Psycholinguistics (CLiPS),
University of Antwerp,
Antwerp, Belgium

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Personal information

- Phone: (+32) 456-12-35-70
- E-mail: ilia.markov@uantwerpen.be
- Nationality: Russian
- Date of birth: 05/08/1983

Work experience

- **Postdoctoral researcher**, June 2019 – present
Centre for Computational Linguistics and Psycholinguistics (CLiPS), University of Antwerp, Antwerp, Belgium
Project: [“The Linguistic Landscape of Hate Speech in Social Media”](#)
Advisor: [Dr. Walter Daelemans](#)
- **Postdoctoral researcher**, June 2018 – May 2019
Automatic Language Modelling and Analysis & Computational Humanities (ALMAAnaCH) Team, French Institute for Research in Computer Science and Automation (INRIA), Paris, France
Project: “Automatic Analysis of Citizens’ Debates”
Advisor: [Dr. Eric Villemonte De la Clergerie](#)

Education

- **PhD (with honors), Computer Science**, 2014 – 2018, **GPA 10/10**
Natural Language Processing Laboratory, Center for Computing Research (CIC),
Instituto Politécnico Nacional (IPN), Mexico City, Mexico
PhD thesis: [“Automatic Native Language Identification”](#)
Advisors: [Dr. Grigori Sidorov](#), Dr. Obdulia Pichardo Lagunas
- **MSc, Language Sciences**, 2012 – 2014, **GPA 17/20**
University of Algarve, Faro, Portugal
MSc thesis: [“Automatic Identification of Whole-Part Relations in Portuguese”](#)
Advisors: [Dr. Jorge Baptista](#), [Dr. Nuno Mamede](#)
- **BSc (with honors), Computer Engineering**, 2001 – 2006, **GPA 5/5**
Kaliningrad State Technical University, Russia
BSc thesis: “Automatic Estimation of Stocking Norms”
Advisor: Dr. Olga Toporkova

Research experience

- Hate speech and abusive language detection
- Sentiment analysis, opinion mining
- Information retrieval, information extraction, text mining, argument mining, text similarity
- Native language identification, native language interference, discriminating between similar languages, author profiling, authorship attribution
- Corpus linguistics, lexical resources: dictionaries, ontologies
- Computational semantics, semantic relations extraction, deep syntactic parsing
- Human-computer interaction

Teaching experience

Overview of my current [teaching activities](#)

- 2021–2022: Natural Language Processing, UA_2007FLWDTA (University of Antwerp)
- 2020–2021: Natural Language Processing, UA_2007FLWDTA (University of Antwerp)
- 2019–2020: Computational Linguistics, UA_2010FLWTAA (University of Antwerp)
- 2017–2018: Natural language processing (Instituto Politécnico Nacional)
- 2016–2017: Information retrieval (Instituto Politécnico Nacional)

Co-advisor

- 2021: MSc thesis “Linguistic Changes in Terry Pratchett's Writing as an Indication of Posterior Cortical Atrophy”, CLiPS, University of Antwerp
- 2021: MSc thesis “Context in Online Hate Speech: Error Analysis of the Performance of BERTje”, CLiPS, University of Antwerp
- 2021: MSc thesis “A Rule-Based Approach for Detecting Vaccination Hesitancy in Online Comments”, CLiPS, University of Antwerp
- 2021: MSc thesis “A Close-up on BERT: Performing a Qualitative Error Analysis for Sarcasm Detection in Dutch Headlines”, CLiPS, University of Antwerp
- 2020: MSc thesis “Cross-Lingual Age Detection on English and German Tweets: Evaluating the Impact of Individual Parts of Speech”, CLiPS, University of Antwerp
- 2018: BSc thesis “Syllables as Features for the Authorship Attribution Task”, ESIME, Instituto Politécnico Nacional (IPN)

Participation in research projects

- 2019–present: **LiLaH – The Linguistic Landscape of Hate Speech in Social Media**, grant ARRS N6-0099 and FWO G070619N, FWO (Flemish NSF) and SSF (Slovenian Science Foundation).
- 2015–2018: **Automatic evaluation of semantic similarity of texts using syntactic n-grams and integrated syntactic graphs**, grant CONACYT 240844, Mexican Government. My responsibilities included building syntactic n-grams of various types.
- 2017: **Applications of convolutional neural networks for the analysis of social networks**, grant SIP 20172008, Mexican Government. My responsibilities included implementation of the author profiling methods and identification and interpretation of the author's social group.
- 2016: **Multi-Labeled Corpus of News in Spanish**, grants of the Mexican government 260178 and 271622 for the collaboration between researchers and research students working in natural language processing. My responsibilities included building a corpus of news in Spanish annotated with the varieties of the Spanish language, author, gender of the author, and topic; [download](#).
- 2016: **Automatic question answering based on semantic and syntactic similarity**, grant SIP 20161947, Mexican Government. My responsibilities included developing methods for syntactic similarity of texts.
- 2015: **Social Media Lexicon**, grants of the Mexican government 260178 and 271622 for the collaboration between researchers and research students working in natural language processing. My responsibilities included building a lexical resource for social media: slang words, contractions, abbreviations, and emoticons commonly used in social media for English, Spanish, Dutch, and Italian; [download](#).

- 2015: **Syntactic and semantic analysis of texts applied to education, law, and social networks**, grant SIP 20152100, Mexican Government. My responsibilities included semiautomatic compilation of ontologies and disambiguation with the application of linguistic traits for machine learning.
- 2015: **Development of a corpus of program code and its annotation for automatic classification**, grant SIP 20151406, Mexican Government. I was responsible for data collection and annotation of the corpus.
- 2014: **Automatic identification of author using continuous and non-continuous syntactic n-grams**, grant SIP 20144274, Mexican Government. My responsibilities included building continuous and non-continuous syntactic n-grams of words and of tags of syntactic relations.
- 2013 – 2014: **STRING – A Hybrid Statistical and Rule-Based Natural Language Processing Chain for Portuguese**. My responsibilities included improving the extraction of semantic relations between textual elements by targeting meronymy relations. I built a rule-based meronymy extraction module and integrated it in the grammar of the STRING system.

Research internships

- March – July 2017: [Fondazione Bruno Kessler](#), Trento, Italy, under [Dr. Carlo Strapparava](#)
- May – June 2015: [University of the Aegean](#), Karlovassi, Samos, Greece, under [Dr. Efstathios Stamatatos](#)
- September 2013 – July 2014: [Spoken Language Systems Laboratory \(L2F\)](#), INESC-ID Lisboa, Lisbon, Portugal, under [Dr. Nuno Mamede](#)
- August 2005 – January 2006: [Satakunta University of Applied Sciences](#), Pori, Finland

Organization of shared tasks

- **PAN Cross-Domain Authorship Verification Task at CLEF 2021**. The task is to assess whether a pair of documents has been authored by the same (previously unseen) individual.
- **PAN Cross-Domain Authorship Verification Task at CLEF 2020**. The task is to assess whether a pair of documents has been authored by the same individual.

Participation in shared tasks on application of machine learning to NLP

- **Sarcasm Detection Shared Task at ACL 2020**. Sarcasm detection using an ensemble approach (ranked 9th out of 39).
- **Indian Native Language Identification (INLI) shared task at FIRE 2018**. Indian Native Language Identification using a machine-learning approach (ranked 3rd out of 14).
- **PAN RUSProfiling shared task at FIRE 2017**. Cross-genre gender identification in Russian texts using machine-learning and statistical approaches (**ranked 1st out of 22 systems**).

- **Native Language Identification (NLI) shared task at EMNLP 2017.** Native Language Identification using a combination of word- and character-level features (**ranked 1st out of 17**).
- **5th PAN Author Profiling competition at CLEF 2017.** Gender and language variety identification in English, Spanish, Portuguese, and Arabic adjusting feature selection and classifier parameters to each language and subtask (ranked 6th out of 22).
- **4th VarDial Discriminating between Similar Languages competition at EACL 2017.** Discriminating between similar languages within 6 language groups using typed and untyped character n-gram features and lexical features (ranked 6th out of 11).
- **4th PAN Author Profiling competition at CLEF 2016.** Cross-genre age and gender identification in English, Spanish, and Dutch using so-called transition point technique with typed character n-grams, lexical features, and non-lexical features (ranked 5th out of 22).
- **3rd PAN Author Profiling competition at CLEF 2015.** Age, gender, and personality traits identification in English, Spanish, Dutch, and Italian using syntactic dependency based n-grams of various types (ranked 17th – 19th out of 22, depending on language).
- **PAN Authorship Identification competition at CLEF 2015.** Author identification with textual patterns based on features obtained from shortest path walks over the Integrated Syntactic Graphs (novel structure introduced by our team) (ranked 11th out of 18).

Skills

- **Linguistics:** computational linguistics, corpus linguistics, discourse analysis, semantics, syntax, rule-based approaches
- **Programming languages and packages:** Python, TensorFlow, PyTorch, Keras, NLTK, pandas, spaCy, scikit-learn, FreeLing, Gensim, Stanford Core NLP
- **Operating systems:** MacOS, Linux, Windows
- **Languages:** English (fluent), Spanish (fluent), Portuguese (intermediate), Dutch (intermediate), Russian (native)

Awards and scholarships

- **Best academic performance of PhD students,** Instituto Politécnico Nacional (IPN) 2017. There are ca. 1,500 PhD students at IPN. The diploma is awarded for best scores and publications.
- **1st rank** (out of 22 systems) in the PAN RUSProfiling shared task at FIRE 2017.
- **1st rank** (out of 17) in the Native Language Identification shared task at EMNLP 2017.
- **Best paper award** (1st place) at the 15th Mexican International Conference on Artificial Intelligence (MICA 2016), for the paper *Author Profiling with doc2vec Neural Network-Based Document Embeddings*.

- **Mexican Government Scholarship** for obtaining a PhD degree, 2014 – 2018.
- **Research Grant BEIFI** of the Instituto Politécnico Nacional (IPN), 2014 – 2018.
- **Erasmus Mundus Action 2 2011-2574 Triple I - Integration, Interaction and Institution** for obtaining MSc at the University of Algarve, Faro, Portugal, 2012 – 2014.
- **Governor of the Region Scholarship** for showing the best academic results at Kaliningrad State Technical University, Kaliningrad, Russia, 2002 – 2006.

Publications

Journals

1. I. Markov, V. Nastase, C. Strapparava. Exploiting Native Language Interference for Native Language Identification. *Natural Language Engineering*, pp. 1–31, 2020. ([DOI](#))
JCR impact factor: 1.465
2. H. Gómez, R. Fuentes, I. Markov, G. Sidorov, A. Gelbukh. A Convolutional Neural Network Approach for Gender and Language Variety Identification. *Journal of Intelligent & Fuzzy Systems*, vol. 36, no. 5, pp. 4845–4855, 2019. ([DOI](#))
JCR impact factor: 1.426
3. G. Sidorov, I. Markov, O. Kolesnikova, L. Chanona. Human Interaction with Shopping Assistant Robot in Natural Language. *Journal of Intelligent & Fuzzy Systems*, vol. 36, no. 5, pp. 4889–4899, 2019. ([DOI](#))
JCR impact factor: 1.426
4. I. Markov, J. Baptista, O. Pichardo. Authorship Attribution in Portuguese Using Character N-grams. *Acta Polytechnica Hungarica*, vol. 14, no. 3, pp. 59–78, 2017. ([DOI](#), [PDF](#))
JCR impact factor: 0.745
5. G. Sidorov, M. Ibarra, I. Markov, R. Guzman, L. Chanona, F. Velásquez. Measuring Similarity Between Karel Programs Using Character and Word N-grams. *Programming and Computer Software*, vol. 43, no. 1, pp. 47–50, 2017. ([DOI](#), [PDF preprint](#))
JCR impact factor: 0.230
6. H. Gómez, I. Markov, G. Sidorov, J.-P. Posadas, M. Sanchez, L. Chanona. Improving Feature Representation Based on a Neural Network for Author Profiling in Social Media Texts. *Computational Intelligence and Neuroscience*, vol. 2016, 13 pages, 2016. ([DOI](#))
JCR impact factor: 1.215

7. G. Sidorov, M. Ibarra, I. Markov, R. Guzman, L. Chanona, F. Velásquez. Automatic Detection of Similarity of Programs in Karel Programming Language based on Natural Language Processing Techniques. *Computación y Sistemas*, vol. 20, no. 2, pp. 279–288, 2016. ([DOI](#), [PDF](#))
Scopus Q2
8. H. Gómez, I. Markov, G. Sidorov, J.-P. Posadas, C. Fócil. Compiling a Lexicon of Social Media for the Author Profiling Task. *Research in Computing Science*, vol. 115, pp. 19–27, 2016. ([PDF](#))
DBLP
9. I. Markov, N. Mamede, J. Baptista. A Rule-Based Meronymy Extraction Module for Portuguese. *Computación y Sistemas*, vol. 19, no. 4, pp. 661–683, 2015. ([DOI](#), [PDF](#))
Scopus Q2

Conferences and chapters in books

1. M. Kestemont, E. Manjavacas, I. Markov, J. Bevendorff, M. Wiegmann, E. Stamatatos, B. Stein, M. Potthast. Overview of the Cross-Domain Authorship Verification Task at PAN 2021. In: *Working Notes of CLEF 2021 – Conference and Labs of the Evaluation Forum*, Bucharest, Romania. CEUR, vol. 2936, pp. 1743–1759, September 21–24, 2021. ([PDF](#))
2. J. Lemmens, I. Markov, W. Daelemans. Improving Hate Speech Type and Target Detection with Hateful Metaphor Features. In: *Fourth Workshop on NLP for Internet Freedom: Censorship, Disinformation, and Propaganda (NLP4IF 2021)*, Online, ACL, pp. 7–16, June 6, 2021. ([PDF](#))
3. I. Markov, W. Daelemans. Improving Cross-Domain Hate Speech Detection by Reducing the False Positive Rate. In: *Fourth Workshop on NLP for Internet Freedom: Censorship, Disinformation, and Propaganda (NLP4IF 2021)*, Online, ACL, pp. 17–22, June 6, 2021. ([PDF](#))
4. I. Markov, N. Ljubešić, D. Fišer, W. Daelemans. Exploring Stylometric and Emotion-Based Features for Multilingual Cross-Domain Hate Speech Detection. In: *Eleventh Workshop on Computational Approaches to Subjectivity, Sentiment and Social Media Analysis (WASSA 2021)*, Online, ACL, pp. 149–159, April 19, 2021. ([PDF](#))
5. J. Bevendorff, B. Chulvi, G. L. De La Peña Sarracén, M. Kestemont, E. Manjavacas, I. Markov, M. Mayerl, M. Potthast, F. Rangel, P. Rosso, E. Stamatatos, B. Stein, M. Wiegmann, M. Wolska, E. Zangerle. Overview of PAN 2021: Authorship Verification, Profiling Hate Speech Spreaders on Twitter, and Style Change Detection. In: *43rd European Conference on Information Retrieval (ECIR 2021)*, Online, LNCS, Springer, vol. 12657, pp. 567–573, March 28 – April 1, 2021. ([DOI](#))

6. N. Ljubešić, I. Markov, D. Fišer, W. Daelemans. The LiLaH Emotion Lexicon of Croatian, Dutch and Slovene. In: *Third Workshop on Computational Modeling of People's Opinions, Personality, and Emotion's in Social Media (PEOPLES 2020)*, Barcelona, Spain (Online), ACL, pp. 153–157, December 13, 2020. ([PDF](#))
7. E. Lotfi, I. Markov, W. Daelemans. A Deep Generative Approach to Native Language Identification. In: *28th International Conference on Computational Linguistics (COLING 2020)*, Barcelona, Spain (Online), International Committee on Computational Linguistics, pp. 1778–1783, December 8–13, 2020. ([DOI](#))
8. J. Bevendorff, B. Ghanem, A. Giachanou, M. Kestemont, E. Manjavacas, I. Markov, M. Mayerl, M. Potthast, F. Rangel, P. Rosso, G. Specht, E. Stamatatos, B. Stein, M. Wiegmann, E. Zangerle. Overview of PAN 2020: Authorship Verification, Celebrity Profiling, Profiling Fake News Spreaders on Twitter, and Style Change Detection. In: *Experimental IR Meets Multilinguality, Multimodality, and Interaction (CLEF 2020)*, Thessaloniki, Greece. LNCS, Springer, vol. 12260, pp. 372–383, September 22–25, 2020. ([DOI](#))
9. M. Kestemont, E. Manjavacas, I. Markov, J. Bevendorff, M. Wiegmann, E. Stamatatos, M. Potthast, B. Stein. Overview of the Cross-Domain Authorship Verification Task at PAN 2020. In: *Working Notes of CLEF 2020 – Conference and Labs of the Evaluation Forum*, Thessaloniki, Greece. CEUR, vol. 2696, September 22–25, 2020. ([PDF](#))
10. J. Lemmens, B. Burtenshaw, E. Lotfi, I. Markov, W. Daelemans. Sarcasm Detection Using an Ensemble Approach. In: *Second Workshop on Figurative Language Processing (FigLang 2020)*, Online, ACL, pp. 264–269, July 9, 2020. ([DOI](#))
11. I. Markov, V. Nastase, C. Strapparava. Anglicized Words and Misspelled Cognates in Native Language Identification. In: *14th Workshop on Innovative Use of NLP for Building Educational Applications (BEA14 2019)*, Florence, Italy. ACL, pp. 275–284, August 2, 2019. ([PDF](#))
12. I. Markov, E. De la Clergerie. INRIA at SemEval-2019 Task 9: Suggestion Mining Using SVM with Handcrafted Features. In: *13th International Workshop on Semantic Evaluation (SemEval-2019)*, Minneapolis, Minnesota, USA. ACL, pp. 1204–1207, June 6–7, 2019. ([PDF](#))
13. I. Markov, G. Sidorov. CIC-IPN@INLI2018: Indian Native Language Identification. In: *Working Notes of FIRE 2018 – 10th International Forum for Information Retrieval Evaluation*, Gandhinagar, India. CEUR-WS.org, vol. 2266, pp. 82–88, December 06–09, 2018. ([PDF](#))

14. I. Markov, V. Nastase, C. Strapparava, G. Sidorov. The Role of Emotions in Native Language Identification. In: *9th Workshop on Computational Approaches to Subjectivity, Sentiment and Social Media Analysis (WASSA 2018)*, Brussels, Belgium. ACL, pp. 123–129, October 31, 2018. ([DOI](#), [PDF](#))
15. I. Markov, H. Gómez, M. Jasso-Rosales, G. Sidorov. CIC-GIL Approach to Author Profiling in Spanish Tweets: Location and Occupation. In: *Third Workshop on Evaluation of Human Language Technologies for Iberian Languages (IberEval 2018)*, Seville, Spain. CEUR-WS.org, vol. 2150, pp. 97–101, September 18, 2018. ([PDF](#))
16. I. Markov, V. Nastase, C. Strapparava. Punctuation as Native Language Interference. In: *27th International Conference on Computational Linguistics (COLING 2018)*, Santa Fe, New Mexico, USA. The COLING 2018 Organizing Committee, pp. 3456–3466, August 20–26, 2018. ([PDF](#))
17. I. Markov, H. Gómez, G. Sidorov, A. Gelbukh. The Winning Approach to Cross-Genre Gender Identification in Russian at RUSProfiling 2017. In: *Working Notes of FIRE 2017 – 9th International Forum for Information Retrieval Evaluation*, Bangalore, India. CEUR-WS.org, vol. 2036, pp. 20–24, December 08-10, 2017. ([PDF](#))
Ranked 1st in the PAN RUSProfiling shared task 2017.
18. I. Markov, L. Chen, C. Strapparava, G. Sidorov. CIC-FBK Approach to Native Language Identification. In: *12th Workshop on Innovative Use of NLP for Building Educational Applications (BEA12 2017)*, Copenhagen, Denmark. ACL, pp. 374–381, September 8, 2017. ([PDF](#))
Ranked 1st in the NLI shared task 2017
19. M. Sanchez, I. Markov, H. Gómez, G. Sidorov. Comparison of Character n-grams and Lexical Features on Author, Gender, and Language Variety Identification on the Same Spanish News Corpus. In: *Experimental IR Meets Multilinguality, Multimodality, and Interaction (CLEF 2017)*, Dublin, Ireland. LNCS, Springer, vol. 10456, pp. 145–151, September 11–14, 2017. ([DOI](#))
20. I. Markov, H. Gómez, G. Sidorov. Language- and Subtask-Dependent Feature Selection and Classifier Parameter Tuning for Author Profiling. In: *Working Notes of CLEF 2017 – Conference and Labs of the Evaluation Forum*, Dublin, Ireland. CEUR, vol. 1866, September 11–14, 2017. ([PDF](#))
21. I. Markov, E. Stamatatos, G. Sidorov. Improving Cross-Topic Authorship Attribution: The Role of Pre-Processing. In: *18th International Conference on Computational Linguistics and Intelligent Text Processing (CICLing 2017)*, Budapest, Hungary. Springer, vol. 10762, pp. 289–302, April 17–23, 2017. ([DOI](#), [PDF preprint](#))

Best poster award, third place

22. H. Gómez, I. Markov, J. Baptista, G. Sidorov, D. Pinto. Discriminating between Similar Languages Using a Combination of Typed and Untyped Character N-grams and Words. In: *4th Workshop on NLP for Similar Languages, Varieties and Dialects (VarDial 2017)*, Valencia, Spain. ACL, pp. 137–145, April 3, 2017. ([PDF](#))
23. I. Markov, H. Gómez, J.-P. Posadas, G. Sidorov, A. Gelbukh. Author Profiling with Doc2vec Neural Network-Based Document Embeddings. In: *15th Mexican International Conference on Artificial Intelligence (MICA I 2016)*, Cancún, Mexico. Part II, LNAI, Springer, vol. 10062, pp. 117–131, October 23–29, 2016. ([DOI](#), [PDF preprint](#))
Best paper award, first place
24. I. Markov, H. Gómez, G. Sidorov, A. Gelbukh. Adapting Cross-Genre Author Profiling to Language and Corpus. In: *Working Notes of CLEF 2016 – Conference and Labs of the Evaluation Forum*, Évora, Portugal. CEUR, vol. 1609, pp. 947–955, September 5–8, 2016. ([PDF](#))
25. J. Baptista, I. Markov. Morphosyntactic processes involving body-part nouns in Portuguese. In: *Perspectives Harrissiennes*. CRL - Cellule de Recherche en Linguistique, pp. 255–267, 2016. ([PDF](#))
26. G. Sidorov, H. Gómez, I. Markov, D. Pinto, N. Loya. Computing Text Similarity using Tree Edit Distance. In: *Annual Conference of the North American Fuzzy Information Processing Society (NAFIPS)*, joint with 2015 5th World Conference on Soft Computing (WConSC), Redmond, WA, USA. IEEE, pp. 1–4, August 17–19, 2015. ([DOI](#), [PDF](#))
27. H. Gómez, G. Sidorov, D. Pinto, I. Markov. A Graph Based Authorship Identification Approach. In: *Working Notes of CLEF 2015 – Conference and Labs of the Evaluation Forum*, Toulouse, France. CEUR, vol. 1391, September 8–11, 2015. ([PDF](#))
28. J.-P. Posadas, I. Markov, H. Gómez, G. Sidorov, I. Batyrshin, A. Gelbukh, O. Pichardo. Syntactic N-grams as Features for the Author Profiling Task. In: *Working Notes of CLEF 2015 – Conference and Labs of the Evaluation Forum*, Toulouse, France. CEUR, vol. 1391, September 8–11, 2015. ([PDF](#))
29. I. Markov, N. Mamede, J. Baptista. Whole-Part Relations Rule-Based Automatic Identification: Issues from Fine-Grained Error Analysis. In: *13th Mexican International Conference on Artificial Intelligence (MICA I 2014)*, Tuxtla Gutiérrez, Mexico. Springer, vol. 8856, pp. 37–50, November 16–22, 2014. ([DOI](#), [PDF priprint](#))
30. I. Markov, N. Mamede, J. Baptista. Automatic Identification of Whole-Part Relations in Portuguese. In: *3rd Symposium on Languages, Applications and Technologies (SLATE 2014)*, Bragança, Portugal. Dagstuhl Publishing, vol. 38, pp. 225–232, June 19–20, 2014. ([DOI](#), [PDF](#))

31. J. Baptista, N. Mamede, I. Markov. Integrating Verbal Idioms into an NLP System. In: *11th International Conference on the Computational Processing of the Portuguese Language (PROPOR 2014)*, São Carlos, SP, Brazil. Springer, vol. 8775, pp. 250–255, October 6–9, 2014.
([DOI](#), [PDF preprint](#))
32. I. Markov, N. Mamede, J. Baptista. Body-Part Nouns and Whole-Part Relations. In: *11th International Conference on the Computational Processing of the Portuguese Language (PROPOR 2014)*, São Carlos, SP, Brazil. Springer, vol. 8775, pp. 125–136, October 6–9, 2014.
([DOI](#), [PDF preprint](#))
33. J. Baptista, N. Mamede, I. Markov. Integrating a Lexicon-Grammar of Verbal Idioms in a Portuguese NLP System. In: *2nd PARSEME General Meeting*, Athens, Greece, March 10–11, 2014.

References: [Dr. Walter Daelemans](#), [Dr. Alexander Gelbukh](#), [Dr. Grigori Sidorov](#)