

Anton M. Alekseev

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github: [alexeyev](https://github.com/alexeyev)

Interests natural language processing, deep learning, ml4se, digital humanities

Education **Computer Science Center**, St. Petersburg, Russia (grad. 2014)
Alumnus, two tracks: Data Science & Software Engineering

St. Petersburg University, St. Petersburg, Russia (grad. 2014, *cum laude*)
Specialist, the Faculty of Mathematics & Mechanics,
Applied Informatics in the field of International Relations,

MOOCs

Social Network Analysis, UMich@Coursera, 2013

Functional Programming Principles in Scala, EPFL@Coursera, 2013

Also: PhD studies at AU RAS, PDMI RAS, and KSTU n. a. I. Razzakov.

Teaching **Teaching assistant/Lecturer** **MCS SPbU**
Feb 2021 – up to now St. Petersburg, Russia
Workshops for the courses of PGMs & DL (pytorch).
Lectures on NLProc (in Russian).

Lecturer **Computer Science Center**
Sep 2017 – Feb 2022 St. Petersburg, Russia
Lectures on Natural Language Processing in Russian.

- Topics: from string processing algorithms to *Transformer*-based models, two lectures a week.
- The design of tests and homeworks (with D. Bobrovnikov and G. Rozhkov).
- The course's syllabus, slides and videorecords are available [online](#).
Also: [YouTube playlist](#), [22 videos](#)

Visiting Lecturer **ITMO University**
Feb 2018 – May 2019 St. Petersburg, Russia
Lectures on Natural Language Processing in English.

- Topics: necessary mathematical and algorithmic toolkits, string processing, **machine learning in NLProc**: language modeling, text classification, duplicate detection, text clustering and topic modeling, modern distributional semantics, POS-tagging, named entities recognition, syntax parsing and statistical machine translation elements.
- The design of tests, homeworks (with K. Buraya) and written examination.

Visiting Teacher **Higher School of Economics**
Sep 2016 – Dec 2016 St. Petersburg, Russia
A short-term contract for teaching a programming workshop in Russian. Introduction into **Programming and Data Analysis** in Specialized Environments.

- Topics: introduction into Python [main part of the course], **NumPy**, **scipy.sparse matrices**, **basic Pandas**, regular expressions, parsing XML, CSV, JSON, introduction into **machine learning with scikit-learn**, GNU coreutils, a peek at `.git/.hg`
- Developed a new and an up-to-date introductory programming course programme: [course site @ HSE.ru](#), [course materials](#).

Other experience **Academic Consultant (part-time)** **St. Petersburg Research Center**
Mar 2024 – up to now St. Petersburg, Russia
Machine learning in applied research.

Acting Junior Researcher **St. Petersburg Department
of Steklov Mathematical Institute
(PDMI RAS)**
Mar 2018 – up to now St. Petersburg, Russia
[AI Lab.](#), led by Dr. Sergey Nikolenko →
→ [Lab. of Appl. Prob. and Alg. Methods](#), led by Dr. Alexander Kulikov
Text-based recommender systems, information extraction, representation learning, user
profiling, algorithms for packet classifiers, machine learning for various domains.

Machine Learning Specialist **Native Media LLC**
Oct 2016 – Feb 2018 St. Petersburg, Russia
Predictive services for native video advertising [nativeroll.tv](#), from scratch.

Intelligent Systems Engineer **SofIT Labs LLC**
Aug 2015 – Sep 2016 St. Petersburg, Russia
NLProc and information retrieval for customer-assisting services.

Intern → Software Engineer **Yandex**
Feb 2013 – Aug 2015 St. Petersburg, Russia
Online reviews processing backend, then Yandex.Rabota.

Skills **Languages:** Russian (Native), English (Advanced)
Programming Languages: Python, Scala, Java, bash, R (basic)
Tools: scikit-learn, keras, PyTorch, scipy, numpy, pandas, gensim
Online Classroom Platforms: Stepik (online tests),
repl.it (workshops, exam tests), Kaggle/Kaggle inClass
Other: \LaTeX , HTML, CSS, Microsoft Office (Word, Excel, PowerPoint)

Schools [Bayesian Methods in Deep Learning Summer School](#)
Aug 26-30, 2017, Moscow, Russia.
The 11th Russian Summer School in Information Retrieval
Aug 21-25, 2017, Yekaterinburg, Russia.
[DeepHack.Turing Summer school-hackathon](#) (Kaggle-based participants selection)
Jul 24-30, 2017, Dolgoprudnyy, Russia.
5th Lisbon Machine Learning School.
Jul 16-23, 2015, Lisbon. Portugal.
International Social Network Analysis Summer School (HSE)
Aug 8–13, 2014, St. Petersburg, Russia.
The 44-th International Youth School-Conference “Current problems in mathematics”
Jan 27 - Feb 2, 2013, Yekaterinburg, Russia.
The 6th Russian Summer School in Information Retrieval.
Aug 6-10, 2012, Yaroslavl, Russia.

Talks

(published conference

papers presentations

are not included)

Open (?) directions of research in Kyrgyz NLP [Russian]
(summer 2023)

Open Information Extraction survey: key papers, tools and datasets [Russian]
(summer 2021, ML Network, 4 Aug. 2021)

Same Words, Different Tone:
Genre-Specific Sentiment Lexicons for Digital Music Reviews [English]
(winter 2019, LMAC-III, 17 Dec. 2019)

Unlemmatization: Recovering Word Forms in Morph. Rich Languages [English]
(autumn 2017, AINL: St. Petersburg, Russia, 20-23 Sept. 2017)

Natural Language Processing: Introduction [Russian]
(spring 2017, Kaggle Club)

How to build Yandex/Google from scratch? [Russian]
(summer 2016, Futurum STREAM Camp)

Service

Reviewing for conferences: AAI, CHI, AIST, CompLing International Workshop, LKE Symposium, SEIM.

Reviewing SPbU, NRU HSE & ITMO University students' BSc/MSc theses.

Twice a member of the attestation commission at the MSc dissertations defences
(SPbU, Faculty of Philology, Math. Linguistics Department).

Member of the **organizing committee** of AIST-2024 conference.

Scientific (co)advisor/consultant of

...Anastasia Predelina, B.Sc. in Math. and Comp. Science at St. Petersburg University.
Neural networks for coordination analysis (2022-2023; published in Doklady Mathematics)

...Georgii Angeni, B.Sc. in Math. and Comp. Science at St. Petersburg University.
Finding heuristic rules for solving the Boolean satisfiability problem using machine learning methods (2022-2023)

...Mikhail Shirokikh, M.Sc. in Mathematics at St. Petersburg University.
Efficient neural architectures for NP-hard problems and recommender systems
(2023-2024; accepted to ACM SIGIR conf. and the Journal of Math. Sciences)

Research papers

K. Khrabrov, A. Ber, A. Tsylin, K. Ushenin, E. Rumiantsev, A. Telepov, D. Protasov, I. Shenbin, A. Alekseev, M. Shirokikh, S. Nikolenko, E. Tutubalina, and A. Kadurin. ∇^2 dft: A universal quantum chemistry dataset of drug-like molecules and a benchmark for neural network potentials. *Accepted to NeurIPS D&B Track 2024 as a poster*, 2024.

M. Shirokikh, I. Shenbin, A. Alekseev, A. Volodkevich, A. Vasilev, A. V. Savchenko, and S. Nikolenko. Neural click models for recommender systems. In *Proceedings of the 47th International ACM SIGIR Conference on Research and Development in Information Retrieval*, pages 2553–2558, 2024.

M. Shirokikh, I. Shenbin, A. Alekseev, A. Volodkevich, A. Vasilev, and S. I. Nikolenko. User response modeling in recommender systems: A survey. *Zapiski Nauchnykh Seminarov POMI*, 530:141–190, 2023a.

A. Alekseev, A. V. Savchenko, E. Tutubalina, E. Myasnikov, and S. I. Nikolenko. Blending of predictions boosts understanding for multimodal advertisements. *Zapiski Nauchnykh Seminarov POMI*, 529:176–196, 2023a.

A. И. Пределина, С. Ю. Дуликов, and А. М. Алексеев. Нейросетевые методы выделения сочинительных связей. *Доклады Российской академии наук. Математика, информатика, процессы управления*, 514 (2):289–296, 2023.

A. Alekseev and G. Kabaeva. Hj-ky-0.1: an evaluation dataset for kyrgyz word embeddings. *Herald of KSTU*, 68 (4):1806–1814, 2023.

A. Alekseev, S. I. Nikolenko, and G. Kabaeva. Benchmarking multilabel topic classification in the kyrgyz language. In *International Conference on Analysis of Images, Social Networks and Texts (to appear in print)*. Springer, Cham, 2023b.

- M. Shirokikh, I. Shenbin, A. Alekseev, and S. I. Nikolenko. Machine learning for sat: Restricted heuristics and new graph representations. *arXiv preprint arXiv:2307.09141*, 2023b.
- A. Nesterov, G. Zubkova, Z. Miftahutdinov, V. Kokh, E. Tutubalina, A. Shelmanov, A. Alekseev, M. Avetisian, A. Chertok, and S. I. Nikolenko. Ruccon: Clinical concept normalization in russian. In *Findings of the Association for Computational Linguistics: ACL 2022*, pages 239–245, 2022.
- A. Alekseev, Z. Miftahutdinov, E. Tutubalina, A. Shelmanov, V. Ivanov, V. Kokh, A. Nesterov, M. Avetisian, A. Chertok, and S. I. Nikolenko. Medical crossing: a cross-lingual evaluation of clinical entity linking. In *Proceedings of the Thirteenth Language Resources and Evaluation Conference*, pages 4212–4220, 2022a.
- M. Vasilkovsky, A. Alekseev, V. Malykh, I. Shenbin, E. Tutubalina, D. Salikhov, M. Stepnov, A. Chertok, and S. I. Nikolenko. Detie: Multilingual open information extraction inspired by object detection. In *Proceedings of the 36th AAAI Conference on Artificial Intelligence*, 2022.
- Kuzma Khrabrov, Ilya Shenbin, Alexander Ryabov, Artem Tsybin, Alexander Telepov, Anton Alekseev, Alexander Grishin, Pavel Strashnov, Petr Zhilyaev, Sergey Nikolenko, and Artur Kadurin. nabladdt: Large-scale conformational energy and hamiltonian prediction benchmark and dataset. *Physical Chemistry Chemical Physics*, 24(42):25853–25863, 2022.
- A. Alekseev, E. Tutubalina, S. Kwon, and S. I. Nikolenko. Near-zero-shot suggestion mining with a little help from wordnet. In *International Conference on Analysis of Images, Social Networks and Texts*, pages 23–36. Springer, Cham, 2022b.
- A. M. Alekseev and S. I. Nikolenko. Recovering word forms by context for morphologically rich languages. *Zapiski nauchnykh seminarov POMI*, 499(0):129–136, 2021.
- R. B. Galinskii, A. M. Alekseev, and S. I. Nikolenko. Word-based russian text augmentation for character-level models. *Zapiski nauchnykh seminarov POMI*, 499(0):206–221, 2021.
- A. Savchenko, A. Alekseev, S. Kwon, E. Tutubalina, E. Myasnikov, and S. Nikolenko. Ad lingua: Text classification improves symbolism prediction in image advertisements. In *Proceedings of the 28th International Conference on Computational Linguistics (COLING 2020)*, pages 1886–1892, 2020.
- A. Alekseev and S. Nikolenko. Recognizing preferred grammatical gender in russian anonymous online confessions. In Petr Sojka, Ivan Kopeček, Karel Pala, and Aleš Horák, editors, *Text, Speech, and Dialogue*, pages 222–230, Cham, 2020. Springer International Publishing. ISBN 978-3-030-58323-1.
- A. Alekseev, E. Tutubalina, V. Malykh, and S. Nikolenko. Improving unsupervised neural aspect extraction for online discussions using out-of-domain classification. *Journal of Intelligent & Fuzzy Systems*, 39(2):2487–2496, 2020.
- I. Shenbin, A. Alekseev, E. Tutubalina, V. Malykh, and S. I. Nikolenko. Recvae: A new variational autoencoder for top-n recommendations with implicit feedback. In *Proceedings of the 13th International Conference on Web Search and Data Mining, WSDM '20*, page 528–536, New York, NY, USA, 2020. Association for Computing Machinery. ISBN 9781450368223.
- V. Malykh, A. Alekseev, E. Tutubalina, I. Shenbin, and S. Nikolenko. Wear the right head: Comparing strategies for encoding sentences for aspect extraction. In *Analysis of Images, Social Networks and Texts: 8th International Conference, AIST 2019, Kazan, Russia, July 17–19, 2019, Revised Selected Papers 8*, pages 166–178. Springer, 2019.
- S. I. Nikolenko, E. Tutubalina, V. Malykh, I. Shenbin, and A. Alekseev. Aspera: Aspect-based rating prediction model. In *Advances in Information Retrieval: 41st European Conference on IR Research, ECIR 2019, Cologne, Germany, April 14–18, 2019, Proceedings, Part II 41*, pages 163–171. Springer, 2019.
- A. Alekseev and S. Nikolenko. User profiling in text-based recommender systems based on distributed word representations. *Communications in Computer and Information Science*, 661:196–207, 2017a. doi: 10.1007/978-3-319-52920-2_19.
- A. Menshikova, D. Maglevanaya, M. Kuleva, S. Bogdanova, and A. Alekseev. Art critics and art producers: Interaction through the text. In *Digital Transformation and Global Society: Third International Conference, DTGS 2018, St. Petersburg, Russia, May 30–June 2, 2018, Revised Selected Papers, Part II 3*, pages 113–124. Springer, 2018.
- A. Alekseev and S. Nikolenko. Word embeddings for user profiling in online social networks. *Computacion y Sistemas*, 21(2):203–226, 2017b. doi: 10.13053/CyS-21-2-2734.
- A. Alekseev and S. I. Nikolenko. Predicting the age of social network users from user-generated texts with word embeddings. *Proceedings of the AINL FRUCT 2016 Conference*, 2017c.
- R. Galinsky, A. Alekseev, and S. I. Nikolenko. Improving neural network models for natural language processing in russian with synonyms. *Proceedings of the AINL FRUCT 2016 Conference*, 2017.
- Алексеев А.М. Тулупьев А.Л., Фильченков А. А. Декодирование последовательности состояний бинарной скрытой марковской модели, представленной в виде алгебраической байесовской сети, по последовательности наблюдений. *Труды СПИИРАН*, 1(24):165–177, 2013.
- A. M. Alekseev. Автоматизация анализа популярности технологических областей в корпусе текстов русскоязычных электронных медиа на основе данных Википедии. In *Всероссийская научная конференция по проблемам информатики СПИСОК-2014*, pages 559–564, 2014.
- Алексеев А.М. Методы построения и обработки скрытых марковских моделей, представленных в виде алгебраических байесовских сетей. In *СПИСОК-2013: Материалы всероссийской научной конференции по проблемам информатики (23–26 апреля 2013 г., Санкт-Петербург)*. СПб.: ВВМ, pages 744–749, 2013.

Алексеев А.М. Представление и визуализация моделей для вычислительных экспериментов с локальными структурами алгебраических байесовских сетей. In *XV Международная конференция по мягким вычислениям и измерениям SCM'12 (25–27 Июня, Санкт-Петербург). Сборник докладов.*, volume 1, pages 215–219, 2012.

Тудупьев А.Л. Алексеев А.М., Фильченков А.А. Оценка правдоподобия наблюдений и декодирование скрытых состояний для скрытых марковских моделей на основе алгебраических байесовских сетей. In *Региональная информатика-2012 (РИ-2012). XIII Санкт-Петербургская международная конференция. Санкт-Петербург, 24–26 октября, 2012 г.: Материалы конференции.*, page 28, 2012.

Miscellaneous

The work presented at the AIST-2023 conference was awarded the Best NLP Paper Award.

Invited to give a keynote at the AIST-2024 conference (October 2024).