Denis Kotkov

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Citizenship: Finland, Russian Federation   Location: Helsinki, Finland

Links: Homepage, Google scholar, GitHub

Postdoctoral researcher working on recommender systems and machine learning. Proven industry experience as software developer (3+ years). Competent in Java, Python, SQL, R. Published in RecSys, SIGIR, CIKM, SAC, CHIIR. Reviewer of RecSys, SIGIR, WWW, JASIST, UMUAI, IUI. PC member of ESIDA 2021 (ACM IUI 2021) and ECIR 2024.

WORK EXPERIENCE

- **University of Helsinki**   Helsinki, Finland
  Postdoctoral researcher   *December, 2020 - Present*

  - Evaluated cross-domain recommendations and explanations
  - Conducted systematic literature review on exploratory search
  - Collected, analyzed and published item-tag relevance datasets (Tag Genome): for `movies` and `books`
  - Led a team of two researchers for eight months, which resulted in three publications (SIGIR, SAC and CHIIR)
  - Taught courses and supervised students
  - Used Python (scikit-learn, pandas and numpy) and R

- **Åbo Akademi University**   Turku, Finland
  Postdoctoral project researcher   *February, 2019 - December, 2020*

  - Developed and evaluated the book recommender system, ClusterExplorer
  - Analyzed book loaning history from the Vantaa City Library
  - Analyzed Maritime data
  - Introduced Scrum
  - Used Python (scikit-learn, pandas and numpy), Java (Lenskit) and R

- **University of Jyväskylä**   Jyväskylä, Finland
  Postdoctoral project researcher   *July, 2018 - February, 2019*

  - Conducted literature review and market research for bot detection software

- **University of Jyväskylä**   Jyväskylä, Finland
  Researcher   *August, 2014 - June, 2018*

  - Investigated serendipity in recommender systems, which resulted in 10 publications
  - Conducted literature review, user studies and designed recommendation algorithms
  - Used Java (Lenskit) and R

- **University of Minnesota**   Minnesota, USA
  Visiting scholar at GroupLens   *February, 2017 - May, 2017*

  - Prepared and conducted an experiment in MovieLens
  - Collected analyzed and published the first serendipity dataset for recommender systems
  - Used Java (Java Play and JOOQ), JS Angular 1 and R

- **Devexperts**   Saint Petersburg, Russia
  Software developer   *November, 2010 - July, 2014*

  - Developed graphical user interfaces of web (dxTrade) and desktop (Tradable) trading platforms
  - Used Java (Swing, Spring and Maven) and ActionScript (Flex)

Education

- **University of Jyväskylä** Jyväskylä, Finland
  Ph.D. in Computer Science *2014 - 2018*
  - Dissertation: Serendipity in Recommender Systems

- **ITMO University** Saint Petersburg, Russia
  M.S. in Computer Science *2012 - 2014*
  - Thesis: Methods and Tools for the Analysis of Twitter Streams

- **ITMO University** Saint Petersburg, Russia
  Specialist (M.S.) in Computer Science (with highest honors) *2007 - 2012*
  - Thesis: Development of the Graphical User Interface of Trading Platform

Teaching

- **University of Helsinki** Finland
  Teacher
  - **Topics in Recommender Systems (2023)** covers offline evaluation, collaborative filtering, content-based filtering, hybrid algorithms, deep learning, non-personalized algorithms and online experiments. The course includes hands on assignments. Tasks: designing the course based on recent literature, delivering lectures, designing and grading programming assignments.

  Teaching assistant
  - **Information Retrieval (2021, 2022, 2023)** on information retrieval algorithms, web crawling, experimental design and statistical analysis. Tasks: a lecture on recommender systems.

- **Åbo Akademi University** Finland
  Teaching assistant
  - **Software Testing (2020)** on testing process from requirements to deployment. It includes topics, such as coverage criteria, input space partitioning, syntax-based testing, regression testing, unit testing and integration testing, model-based testing. Practical exercises are completed in Java. Tasks: teaching lab sessions, preparing and grading assignments

- **University of Jyväskylä** Finland
  Teaching assistant
  - **Cloud Computing (2018)** on regulatory frameworks, security issues, business models and standards. Tasks: preparing and grading exams and assignments
  - **Business Analytics and Big Data Management (2017)** on storing and analyzing Big Data. Tasks: installing and setting up IBM tools (Big Insights), supervising demo sessions and grading assignments
  - **Advanced Topics in Social Media (2015)** on applying data mining techniques to social media data. Tasks: lecturing (a lecture on recommender systems), preparing and grading assignments

Supervision

- **University of Helsinki** Finland
  Bachelor's theses
  - **Matrix factorization in collaborative filtering (2023)** Anton Leppänen
  - **Open-Ended Reinforcement Learning Through Automatic Curriculum Creation (2023)** Olivia Horjamo
  - **Shilling attack models against collaborative filtering recommender systems (2023)** Santeri Pitkänen
  - **Nearest-Neighbour Algorithms in Collaborative Filtering (2022)** Sami Laine

- **Åbo Akademi University** Finland
  Master's thesis
  - **A Study on Recommender System with Library Data (2019)** Umesh Raj Satyal

1. **Denis Kotkov,** Alan Medlar, Triin Kask, and Dorota Głowacka. 2024. The Dark Matter of Serendipity in Recommender Systems. In *Proceedings of the 2024 ACM SIGIR Conference on Human Information Interaction and Retrieval (CHIIR '24),* March 10–14, 2024, Sheffield, United Kingdom. ACM, New York, NY, USA, 11 pages. 10.1145/3627508.3638342

2. Alan Medlar, **Denis Kotkov,** and Dorota Glowacka. (2023). Unexplored frontiers: A review of empirical studies of exploratory search. *arXiv preprint arXiv:2312.13695.*

3. **Denis Kotkov,** Alan Medlar, and Dorota Glowacka. 2023. Rethinking Serendipity in Recommender Systems. In *Proceedings of the 2023 Conference on Human Information Interaction and Retrieval,* March, 2023, Austin, TX, USA. ACM, New York, NY, USA, 5 pages. 10.1145/3576840.3578310

4. **Denis Kotkov,** Alan Medlar, Umesh Raj Satyal, Alexandr Maslov, Mats Neovius, and Dorota Glowacka. 2022. Rating consistency is consistently underrated: An exploratory analysis of movie-tag rating inconsistency. In *The 37th ACM/SIGAPP Symposium on Applied Computing (SAC '22),* April 25–29, 2022, Virtual Event. ACM, New York, NY, USA, 10 pages. 10.1145/3477314.3507270

5. **Denis Kotkov,** Alan Medlar, Alexandr Maslov, Umesh Raj Satyal, Mats Neovius, and Dorota Glowacka. 2022. The Tag Genome Dataset for Books. In *Proceedings of the 2022 ACM SIGIR Conference on Human Information Interaction and Retrieval (CHIIR '22),* March 14–18, 2022, Regensburg, Germany. ACM, New York, NY, USA, 5 pages. 10.1145/3498366.3505833

6. **Denis Kotkov,** Alexandr Maslov, and Mats Neovius. 2021. Revisiting the Tag Relevance Prediction Problem. In *Proceedings of the 44th International ACM SIGIR Conference on Research and Development in Information Retrieval (SIGIR '21),* July 11–15, 2021, Virtual Event, Canada. ACM, New York, NY,USA, 5 pages 10.1145/3404835.3463019

7. **Denis Kotkov,** Qian Zhao, Kati Launis, and Mats Neovius. 2020. ClusterExplorer: Enable User Control over Related Recommendations via Collaborative Filtering and Clustering. In *Fourteenth ACM Conference on Recommender Systems (RecSys '20),* September 22–26, 2020, Virtual Event, Brazil. ACM, New York, NY, USA, 6 pages. https://doi.org/10.1145/3383313.3412221

8. **Denis Kotkov,** Kati Launis, and Mats Neovius. 2020. In quest of transition books. In *5th Conference on Digital Humanities in the Nordic Countries, DHN 2018,* pages 275–283, 2020

9. **Denis Kotkov,** Jari Veijalainen, and Shuaiqiang Wang. How does serendipity affect diversity in recommender systems? A serendipity-oriented greedy algorithm. *Computing,* 102.2 (2020): 393-411. doi: 10.1007/s00607-018-0687-5

10. Gaurav Pandey, **Denis Kotkov,** and Alexander Semenov. 2018. Recommending Serendipitous Items using Transfer Learning. *In The 27th ACM International Conference on Information and Knowledge Management (CIKM'18),* October 22–26, 2018, Torino, Italy. ACM, New York, NY, USA, 4 pages. doi: 10.1145/3269206.3269268

11. **Denis Kotkov,** Gaurav Pandey, and Alexander Semenov. Gaming Bot Detection: A Systematic Literature Review. In *International Conference on Computational Social Networks.* Springer, Cham, 2018. doi: 10.1007/978-3-030-04648-4_21

12. **Denis Kotkov,** Joseph A. Konstan, Qian Zhao, and Jari Veijalainen. Investigating serendipity in recommender systems based on real user feedback. In *Proceedings of the 33rd Annual ACM Symposium on Applied Computing,* pages 1341-1350, 2018. ACM. doi: 10.1145/3167132.3167276

13. **Denis Kotkov,** Shuaiqiang Wang, and Jari Veijalainen. Improving Serendipity and Accuracy in Cross-Domain Recommender Systems. In *International Conference on Web Information Systems and Technologies. Springer,* Cham, 2017. doi: 10.1007/978-3-319-66468-2_6

14. **Denis Kotkov,** Jari Veijalainen, and Shuaiqiang Wang. A serendipity-oriented greedy algorithm for recommendations. In *Proceedings of the 13th International conference on web information systems and technologies.* SCITEPRESS, 2017. doi: 10.5220/0006232800320040 **(best paper award)**

15. Boyang Zhang, Jari Veijalainen, and **Denis Kotkov.** Samsung and Volkswagen Crisis Communication in Facebook and Twitter - A Comparative Study. In *Proceedings of the 13th International conference on web information systems and technologies.* SCITEPRESS, 2017. doi: 10.5220/0006301403120323

16. **Denis Kotkov,** Shuaiqiang Wang, and Jari Veijalainen. A survey of serendipity in recommender systems. *Knowledge-Based Systems,* 111:180-192, 2016. doi: 10.1016/j.knosys.2016.08.014

17. **Denis Kotkov,** Jari Veijalainen, and Shuaiqiang Wang. Challenges of serendipity in recommender systems. In *Proceedings of the 12th International Conference on Web Information Systems and Technologies,* volume 2, pages 251-256. SCITEPRESS, 2016. doi: 10.5220/0005879802510256

18. **Denis Kotkov,** Shuaiqiang Wang, and Jari Veijalainen. Cross-domain recommendations with overlapping items. In *Proceedings of the 12th International conference on web information systems and technologies,* volume 2, pages 131-138. SCITEPRESS, 2016. doi: 10.5220/0005851301310138

19. Boyang Zhang, **Denis Kotkov,** Jari Veijalainen, and Alexander Semenov. Online Stakeholder Interaction of Some Airlines in the Light of Situational Crisis Communication Theory. In *Conference on e-Business, e-Services and eSociety,* pages 183–192. Springer, 2016. doi: 10.1007/978-3-319-45234-0_17

20. Boyang Zhang, Vos Marita, Jari Veijalainen, Shuaiqiang Wang, and **Denis Kotkov.** The issue arena of a corporate social responsibility crisis-the volkswagen case in twitter. *Studies in Media and Communication,* 4(2):32–43, 2016. doi: 10.11114/smc.v4i2.1746

21. Boyang Zhang, Jari Veijalainen, and **Denis Kotkov.** Volkswagen emission crisis: Managing stakeholder relations on the web. In *Proceedings of the 12th International Conference on Web Information Systems and Technologies,* volume 1, pages 176-187. SCITEPRESS, 2016. doi: 10.5220/0005892401760187

22. Aleksandr Farseev, **Denis Kotkov,** Alexander Semenov, Jari Veijalainen, and Tat-Seng Chua. Cross-social network collaborative recommendation. In *Proceedings of the ACM Web Science Conference.* ACM, 2015. doi: 10.1145/2786451.2786504

CERTIFICATIONS

- Certified Professional Java SE 6 Programmer (SCJP), August, 2013

- Flex 4 Adobe Certified Expert (Flex 4 ACE), May, 2011

VOLUNTEER EXPERIENCE

Volunteered in the FRUCT conference (Finnish-Russian University Cooperation in Telecommunications) at the University of Jyväskylä, Finalnd in November, 2016 and May, 2018.

SKILLS

- Languages: Russian (native), English (advanced), Finnish (intermediate)

- Programming languages and frameworks: Java (Lenskit, Spring, Swing), Python (scikit-learn, pandas and numpy), JavaScript (jQuery), ActionScript (Flex), SQL, PHP, R

- Tools: Subversion, Git, Maven, Ant