

Education

Ph.D | Computer Science | Fall 2015 – present

GPA: 4.0 Iowa State University, USA

B.S. | Computer Science / School of Software Engineering | Fall 2011 – Spring 2015

GPA: 3.73 National Research University Higher School of Economics, Russia

Awards and scholarships

- Teaching excellence award from ISU, Dept. of Computer Science, April 2017.
- Research excellence award from ISU, Dept. of Computer Science, April 2017.
- Robert Stewart Early Research Recognition Award from ISU, Dept. of Computer Science, April 2016.
- Higher School of Economics Scholarship for social and cultural activity, December 2012.
Awarded for ACM ICPC semifinal participation and social activities.
- Government Academic Scholarship for students. Awarded for excellent academic performance while studying at the Higher School of Economics in the 1st, 3rd, 4th, 6th, 7th and 8th semesters.

Appointments

I was lucky to obtain both pure research as well as diversified teaching experience at ISU.

Research assistant: Fall 2016, Summer 2017, and Fall 2017. Focusing on Algorithm Design, NP-completeness, and Heuristics for computational problems in evolutionary biology. Working with Prof. Oliver Eulenstein.

Teaching assistant: Fall 2015 (C/C++ advanced programming course), Spring 2016 (Excel/Access course), Spring 2017 (Computational theory course).

Research projects

- In preparation: *NP-hardness of Mean and Median Consensus Problems*.
- A. Markin and O. Eulenstein. *Cophenetic Median Trees Under the Manhattan Distance*. ACM-BCB 2017 proceedings (August 20-23, Boston, MA).
- P. Gorecki, A. Markin, A. Mykowiecka, J. Paszek, and O. Eulenstein. *Phylogenetic Tree Reconciliation: Mean Values for Fixed Gene Trees*. In International Symposium on Bioinformatics Research and Applications, pp. 234-245. Springer, Cham, 2017.
- A. Markin and O. Eulenstein. *Computing Manhattan Path-Difference Median Trees: a Practical Local Search Approach*. Accepted and published as a preprint in IEEE/ACM Transaction on Computational Biology and Bioinformatics (invited paper).
- A. Markin and O. Eulenstein. *Efficient Local Search for Euclidean Path-Difference Median Trees*. Accepted in IEEE/ACM Transaction on Computational Biology and Bioinformatics (invited paper).
- A. Markin and O. Eulenstein. *Manhattan Path-Difference Median Trees*. ACM-BCB 2016 proceedings (October 2-5, Seattle, WA).
- A. Markin and O. Eulenstein. *Path-Difference Median Trees*, Bioinformatics Research and Applications: 12th International Symposium, ISBRA 2016, Minsk, Belarus, June 5-8, 2016. Springer International Publishing, Cham, 2016.
- *Bicluster Analysis over Unstructured Text Data from the Internet* (Thesis work for B.S., 2015).
Project advisor: Prof. Boris G. Mirkin.

Selected software projects

- **Distributed Web Service for Genomic Sequence Alignment from user-specified reads.** The project was deployed on Cloudera managed virtual machine cluster. The sequence alignment tool was optimized for Hadoop, and a web-based interface was provided for running alignment jobs.
- **Mobile Social-Networking Geolocation Application** for Friends Presence Notification (sophomore year). Android application with a back-end on Google App Services. Implemented using Google Maps API.
- **Program for Experimental Evaluation of In-memory Data Indexing Algorithms** (junior year), implemented in C# with visual interface. Included implementation of such methods as B* tree indexing, bitmap indexing, compressed bitmap indexing.
- **Program for Bicluster Analysis over Unstructured Text Data from the Internet** (bachelor thesis work). Included web crawling of topic-based scientific abstracts, implementation of iterative biclustering methods, Natural Language Processing techniques, interactive visualization of biclusters using Nodebox, web-based visualization and analysis of biclusters. The program is both available as a Python library and as a stand-alone web-based tool (implemented using Python Flask framework).
- **Tools for computing large-scale evolutionary trees using state-of-the-art heuristics.** Python and Java software; several publications with refereed conferences and invited journal manuscripts.

IT Experience

- Part-time job: **FORS** (October 2013 – July 2014, Russia) – development of large-scale web service components with Oracle frameworks.
- Internships: **ROSA Company** (Summer 2012 and 2014, Russia) – assembly and restructuring of Linux RPM packages.
- PMSOFT** (Summer 2013, Russia) – development of a back-end of a Java application.