# Aleksandr Drozd

*curriculum vitae*

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## Brief Profile

Aleksandr Drozd got his Ph.D. in Mathematical and Computing Sciences from Tokyo Institute of Technology in 2014 and is currently holding a post-doctoral researcher position at the Global Scientific Information and Computing Center at Tokyo Tech, working on data-intensive algorithms for massively parallel heterogeneous supercomputers. His research interests lie on the intersection of the natural language processing, intelligent data analysis and high performance computing.

## Education

2010-2014 **Ph.D**, Tokyo Institute of Technology, Graduate School of Information Science and Technology, Tokyo. Thesis title: "Memory-Conscious Optimizations for Sorting and Sequence Alignment for Massively Parallel Heterogeneous Architectures."

2000-2005 **Specialist degree.** Moscow State University. Thesis title: "Semantic Pseudo-Code: Approach to Meaning-Base Search."

## Skills and Special Powers

- Academic skills: scientific research, evaluating the literature, conducting experiments and data analysis, publishing results etc. My main interest is on the intersection of the high performance computing (**HPC**) and intelligent data processing: natural language processing (**NLP**), artificial intelligence (**AI**), **data analytics**. I also have some some experience with computational biology.
- My core competence is in **computer science** - foundations of information and computation, algorithms and data structures.
- **Coding/software Development**: Im staying a passionate programmer, doing a fair amount of coding to support my research ideas and investigations, also sometimes for fun. From past experience as a software developer in the industrial context Ive brought with me such things as object oriented design / patterns/ development processes. For hands-on coding I mainly use **C,C++** (including those new awesome standards) for everything performance-critical along with a set of libraries/extensions/tools for parallel programming - **CUDA, OpenMP, MPI, OpenCL, TBB**, etc. I love **Python** and use it for everything else - high level scripting, quick prototyping and such. I have experience with databases (SQL and noSQL), web technologies and version control systems, computer algebra and publishing systems.
- I use machine **machine learning** extensively - from basic statistical analysis methods to artificial neural networks.
- **Teaching**: I have several years of teaching computer science in the university experience.

## Work Experience

2014-onwards **Post-doctoral researcher**, Tokyo Institute of Technology, Global Scientific Information and Computing Center.

2005-2010 **Lecturer**, Moscow State University (Sevastopol Branch) (http://www.msusevastopol.net/), programming department, Sevastopol.
Teaching courses on parallel data processing, computer graphics and system programming.

2006-2009 **Software architect and developer**, Outsourcing Ukraine (http://www.outsourcing-ukraine.com/), Sevastopol, $C++/C\#$ programming, software design.

2005-2006 **Software developer**, Private enterprise Soft-Pilot 2000 (http://www.softpilot2000.com.ua/) $C++/C\#$ programming

2003-2005 **Laboratory assistant**, Moscow State University (Sevastopol Branch).
UNIX system administration and computer laboratory maintenance as a part-time job while studying at the same university.

## Languages

Russian **native**

English **fluent**

Japanese **intermediate**

Ukrainian **intermediate**

French **beginner**

## Interests

Music I play cello and guitar and sing

Photography nightwind.in

Sport hiking and mountaineering, karate

## Publications

- Aleksandr Drozd, Olaf Witkowski, Satoshi Matsuoka, Takashi Ikegami Signal-Driven Swarming: A Parallel Implementation of Evolved Autonomous Agents to Perform A Foraging Task *Proceedings of SWARM 2015 - The First International Symposium on Swarm Behavior and Bio-Inspired Robotics, Kyoto, Oct 2015.*
- Aleksandr Drozd, Satoshi Matsuoka. HPC and Interactive Big Data Analytics: Case Study of Distributional Semantics. *Proceedings of IPSJ SIG Technical Reports 2014-HPC-146, Naha, Oct 2014.*
- Hideyuki Shamoto, Koichi Shirahata, Aleksandr Drozd, Hitoshi Sato, Satoshi Matsuoka. Large-scale Distributed Sorting for GPU-based Heterogeneous Supercomputers. *Proceedings of 2014 IEEE Conference of Big Data, October 2014, to appear.*
- Aleksandr Drozd, Miquel Pericàs, Satoshi Matsuoka. Efficient String Sorting on Multi- and Many-Core Architectures *in Proceedings of IEEE 3rd International Congress on Big Data (2014), to appear*
- Aleksandr Drozd, Naoya Maruyama, Satoshi Matsuoka. Sequence Alignment on Massively Parallel

Heterogeneous Systems in *Proceedings of IEEE 26th International Parallel and Distributed Processing Symposium Workshops & PhD Forum (2012), pages 2498 - 2501, ISBN 978-1-4673-0974-5*

- Aleksandr Drozd, Naoya Maruyama, Satoshi Matsuoka. A Multi GPU Read Alignment Algorithm with Model-based Performance Optimization, *Springer's Lecture Notes in Computer Science N7851 (2012), pages 270-277.*
- Aleksandr Drozd, Naoya Maruyama, Satoshi Matsuoka. Fast GPU Read Alignment with Burrows Wheeler Transform Based Index, *In Companion Proceeding of SC'11 Conference on High Performance Computing Networking, Storage and Analysis, 2011, Pages 21-22 .*
- Aleksandr Drozd, Naoya Maruyama, Satoshi Matsuoka. Fast Read Alignment with Burrows Wheeler Transform: the GPU Perspective, In Proceedings of the 24th Summer United Workshops on Parallel, Distributed, and Cooperative Processing (SWoPP 2011) , August 2011.
- Gladkva G.P., Drozd A.A., Towards Easier Querying of XML-based Linguistic Corpora, *Taurida Bulletin of Mathematics and Informatics. #2, 2009, pages 71-77*