

Anton Beloglazov

Cloud Computing and Distributed Systems (CLOUDS) Laboratory

CONTACT INFORMATION

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RESEARCH INTERESTS

- Distributed systems
- Cloud computing
- Virtualization
- Resource management
- Algorithm design and analysis
- Energy efficiency in data centers

EDUCATION

Ph.D. in Computer Science and Software Engineering 03/2009 – 01/2013
*Department of Computing and Information Systems,
Faculty of Engineering, The University of Melbourne, Australia*

Thesis: Energy and Performance Efficient Dynamic Consolidation of Virtual Machines in Cloud Data Centers.

Supervisor: Prof. Rajkumar Buyya.

The research is focused on algorithms for dynamic consolidation of virtual machines in Cloud data centers to improve the utilization of physical resources and reduce energy consumption under quality of service constraints. I contributed to the development of the [CloudSim](#) framework used to evaluate the proposed algorithms.

Currently, I am working on [OpenStack Neat](#), a framework for dynamic consolidation of virtual machines implemented as an extension to the OpenStack Cloud platform.

M.Sc. in Informatics and Computer Science 09/2006 – 06/2008
*Faculty of Automation and Computer Engineering,
Novosibirsk State Technical University, Russia*

Master's thesis: Research and Development of Algorithms and Software for Remote Execution of Simulation Programs on Multicomputers.

The average grade is 4.81 out of 5. The grade percentage is 96%. I was the 3rd in the final graduating class.

Honors: The thesis has been marked 5 out of 5. The research work was a part of a project supported by Russian Foundation for Basic Research (RFBR), Grant # 05-07-98003, and Russian Academy of Sciences (RAS), Grant # 15.2.

B.Sc. in Informatics and Computer Science 09/2002 – 06/2006
*Faculty of Automation and Computer Engineering,
Novosibirsk State Technical University, Russia*

Bachelor's thesis: Development of a Simulation Model for Studying the Local Networking Principles Under the Channel and Physical Level Standards.

Honors: The thesis has been marked 5 out of 5. I was the 10th out of 70 students in the final graduating class.

COMPUTER SKILLS

- Python, Haskell, Clojure, Scala, Java, C/C++, C#, PHP, SQL (MySQL, PostgreSQL), XML, JavaScript, HTML, CSS, UML, LaTeX, Simulation (AnyLogic, OM-NeT++, CloudSim), Git, SVN, Ant, Maven.
- Functional programming, test-driven development, design patterns, web services.
- Linux and Windows system administration.

SCHOLARSHIPS
AND AWARDS

International Postgraduate Research Scholarship (IPRS)	03/2009 – 03/2013
Melbourne International Research Scholarship (MIRS)	03/2009 – 08/2012
Microsoft Research and EII Fellowship for 2011 EII PhD School	09/2011
The Best Presentation at NSTU Days of Science – 2008	03/2008
Russian Federation Academic Scholarship	02/2003 – 06/2008

PUBLICATIONS

Book Chapters

1. **Anton Beloglazov**, Rajkumar Buyya, Young Choon Lee, and Albert Zomaya, “A Taxonomy and Survey of Energy-Efficient Data Centers and Cloud Computing Systems,” *Advances in Computers*, Marvin V. Zelkowitz (editor), Volume 82, Pages: 47-111, ISBN: 978-0-12-385512-1, Academic Press, USA, 2011.

Journal Publications (6)

2. **Anton Beloglazov** and Rajkumar Buyya, “Managing Overloaded Hosts for Dynamic Consolidation of Virtual Machines in Cloud Data Centers Under Quality of Service Constraints,” *IEEE Transactions on Parallel and Distributed Systems (TPDS)*, IEEE CS Press, USA, 2012 (in press, accepted on August 2, 2012).
3. **Anton Beloglazov**, Dipyaman Banerjee, Alan Hartman, and Rajkumar Buyya, “A Product Line of IT Service Delivery Simulation Models,” *Journal of Service Research (JSR)*, SAGE Publications, UK, 2012 (under review).
4. **Anton Beloglazov** and Rajkumar Buyya, “Optimal Online Deterministic Algorithms and Adaptive Heuristics for Energy and Performance Efficient Dynamic Consolidation of Virtual Machines in Cloud Data Centers,” *Concurrency and Computation: Practice and Experience (CCPE)*, Volume 24, Issue 13, Pages: 1397-1420, John Wiley & Sons, Ltd, USA, 2012.
5. **Anton Beloglazov**, Jemal Abawajy, and Rajkumar Buyya, “Energy-Aware Resource Allocation Heuristics for Efficient Management of Data Centers for Cloud Computing,” *The International Journal of Grid Computing and eScience, Future Generation Computer Systems (FGCS)*, Volume 28, Issue 5, Pages: 755-768, Elsevier Science, The Netherlands, 2012.
6. Kyong Hoon Kim, **Anton Beloglazov**, and Rajkumar Buyya, “Power-Aware Provisioning of Virtual Machines for Real-time Cloud Services,” *Concurrency and Computation: Practice and Experience (CCPE)*, Volume 23, Issue 13, Pages: 1492-1505, John Wiley & Sons, Ltd, USA, 2011.
7. Rodrigo N. Calheiros, Rajiv Ranjan, **Anton Beloglazov**, Cesar A. F. De Rose, and Rajkumar Buyya, “CloudSim: A Toolkit for Modeling and Simulation of Cloud Computing Environments and Evaluation of Resource Provisioning Algorithms,” *Software: Practice and Experience (SPE)*, Volume 41, Number 1, Pages: 23-50, John Wiley & Sons, Ltd, USA, 2011.

Conference Publications (6)

8. **Anton Beloglazov** and Rajkumar Buyya, “Adaptive Threshold-Based Approach for Energy-Efficient Consolidation of Virtual Machines in Cloud Data Centers,” *Proceedings of the 8th International Workshop on Middleware for Grids, Clouds and e-Science (MGC 2010)*, Bangalore, India: ACM, November 29 – December 3, 2010.

9. Rajkumar Buyya, **Anton Beloglazov**, and Jemal Abawajy, “Energy-Efficient Management of Data Center Resources for Cloud Computing: A Vision, Architectural Elements, and Open Challenges,” *Proceedings of the 2010 International Conference on Parallel and Distributed Processing Techniques and Applications (PDPTA 2010)*, Las Vegas, USA, July 12-15, 2010 – Keynote Paper.
10. **Anton Beloglazov** and Rajkumar Buyya, “Energy Efficient Resource Management in Virtualized Cloud Data Centers,” *IEEE TCSC Doctoral Symposium, Proceedings of the 10th IEEE/ACM International Symposium on Cluster, Cloud, and Grid Computing (CCGrid 2010)*, Melbourne, Australia, May 17-20, 2010.
11. Kyong Hoon Kim, **Anton Beloglazov**, and Rajkumar Buyya, “Power-Aware Provisioning of Cloud Resources for Real-time Services,” *Proceedings of the 7th International Workshop on Middleware for Grids, Clouds and e-Science (MGC 2009)*, Urbana Champaign, Illinois, USA: ACM, 2009.
12. **Anton Beloglazov** and Sergey Piskunov, “An Algorithm for Two-Level Scheduling of Parallel Jobs,” *Proceedings of the All-Russian Science Conference of Young Scientists “Science. Technologies. Innovations.”*, Part 1, Novosibirsk, Russia, December 6-9, 2007, pp. 164-168.
13. **Anton Beloglazov** and Sergey Piskunov, “A System for Remote Execution of Simulation Programs on Multicomputers,” *Works of ICMaMG SB RAS, Series of Computer Science*, Number 7, Novosibirsk, Russia, 2007, pp. 181-186.

Poster Papers (3)

14. **Anton Beloglazov** and Rajkumar Buyya, “Energy-Efficient Consolidation of Virtual Machines in Cloud Data Centers,” *Proceedings of the IBM Collaborative Academia Research Exchange Workshop (I-CARE 2010)*, Bangalore, India, October 22, 2010.
15. **Anton Beloglazov** and Rajkumar Buyya, “Energy-Efficient Allocation of Virtual Machines in Cloud Data Centers,” *Proceedings of the 10th IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing (CCGrid 2010)*, Melbourne, Australia, May 17-20, 2010.
16. **Anton Beloglazov** and Rajkumar Buyya, “Power and Performance Efficient Resource Management in Cloud Computing,” *Proceedings of the IEEE Science and Engineering Graduate Research Expo 2009*, Melbourne, Australia, 2009, pp. 38-40.

Technical Reports (2)

17. **Anton Beloglazov** and Rajkumar Buyya, “OpenStack Neat: A Framework for Dynamic Consolidation of Virtual Machines in OpenStack Clouds – A Blueprint,” *Technical Report CLOUDS-TR-2012-4*, Cloud Computing and Distributed Systems Laboratory, The University of Melbourne, August 14, 2012.
18. **Anton Beloglazov**, Sareh Fotuhi Piraghaj, Mohammed Alrokayan, and Rajkumar Buyya, “Deploying OpenStack on CentOS Using the KVM Hypervisor and GlusterFS Distributed File System,” *Technical Report CLOUDS-TR-2012-3*, Cloud Computing and Distributed Systems Laboratory, The University of Melbourne, August 14, 2012.

PROFESSIONAL
EXPERIENCE

Research Intern at IBM Research – Australia

06/2011 – Present

Research topic: Microscopic Traffic Simulation.

6-8 hours per week. The research focuses on microscopic discrete event simulation of traffic and transportation systems using car-following models, such as the Intelligent Driver Model (IDM). The developed simulation models are applied to the optimization of the traffic flow, traffic light sequences, and road maintenance.

Research Intern at IBM Research – India

09/2010 – 12/2010

Research topic: A Product Line of IT Service Delivery Simulation Models.

The research aimed at understanding a variety of IT service delivery contexts and simulation models, extracting common elements, and implementing a library of reusable components, to demonstrate the feasibility of this approach and its efficiency in generating new models of service variants. The work leveraged the initial models created by the IBM Research teams in Watson and India and built a product line structure for the family of models required by IBM's Global Delivery teams.

Open Source Projects

09/2009 – Present

[OpenStack Neat](#) – a framework for dynamic consolidation of virtual machines.

[openstack-centos-kvm-glusterfs](#) – a set of shell scripts and a step-by-step guide to installing OpenStack on CentOS using KVM and GlusterFS.

[CloudSim](#) – a Java framework for simulating Cloud computing systems.

[arch-xmonad-zsh](#) – a set of configuration files and shell scripts for setting up a desktop environment using Arch Linux, Xmonad, Zsh, Emacs, etc.

[clj-genetic](#) – a Clojure library for implementing real-coded genetic algorithms.

[clj-predicates](#) – a small Clojure library of useful predicate functions.

[clojure-archetype-servlet](#) – a Maven archetype for creating a blank Clojure servlet project configured to use Jetty with auto compilation and reloading.

[Google Docs Upload](#) – a tool for batch uploading documents to Google Docs.

[Zotero Scholar Citations](#) – a Zotero plugin for fetching citations from Google Scholar.

[Favorite URL Opener](#) – an extension to Google Chrome allowing the user to open multiple saved URLs in one click.

[bottom-hover-clock](#) – a simple extension to Gnome 3 that displays a pop-up with the current date and time when the mouse is moved to the bottom of the screen.

Web Developer

08/2008 – 02/2009

XIAG AG, Novosibirsk, Russia; headquarters in Zürich, Switzerland

Web application development using PHP, MySQL, PostgreSQL, Javascript, HTML, CSS (40 hours per week). I was involved in the following projects:

- <http://engadin.stmoritz.ch/>
- <http://www.giveawine.ch/>

Apart from that, I have developed an internal tool for cron job monitoring, and worked on improvements of the company's CMS and core PHP framework.

	Web Developer 02/2007 – 08/2008 <i>SB RAS Publishing, Novosibirsk, Russia</i> Web site development, support, and content management.
	Web Developer 06/2002 - 08/2008 <i>Freelance</i> Web site development using PHP, MySQL, Javascript, HTML, CSS. Example projects: <ul style="list-style-type: none"> • http://express-prigorod.ru/ • http://www.ochistkakotlov.ru/ • http://www.defrag.ru/
	Web Developer 06/2004 – 09/2004 <i>Softomate LLC, Novosibirsk, Russia</i> Web site development using PHP, MySQL, Javascript, HTML, CSS.
	Web Developer 06/2003 – 09/2003 <i>WebMotion, Novosibirsk, Russia</i> Web site development using PHP, MySQL, Javascript, HTML, CSS.
CERTIFICATIONS	Administration of the Linux OS 09/2007 – 02/2008 <i>Training Center of Mathematics and Computer Science, Faculty of Applied Mathematics and Computer Science, Novosibirsk State Technical University, Novosibirsk, Russia</i> Information-Telecommunication Systems 11/2007 – 12/2007 <i>Faculty of Advanced Training, Novosibirsk State Technical University, Novosibirsk, Russia</i>
TEACHING EXPERIENCE	Professor's Aide – “Success and Issues of Grid Computing” 2007 <i>Faculty of Automation and Computer Engineering, Novosibirsk State Technical University, Novosibirsk, Russia</i> Developed the syllabus and overall course structure. Instructor – “Simulation of Network Systems in OMNeT++” 2007 <i>Faculty of Automation and Computer Engineering, Novosibirsk State Technical University, Novosibirsk, Russia</i> Developed materials for the laboratory practice. Instructor – “Development of Distributed Software Using CORBA” 2007 <i>Faculty of Automation and Computer Engineering, Novosibirsk State Technical University, Novosibirsk, Russia</i> Developed materials for the laboratory practice.
ACADEMIC SERVICES	Organization of Scientific Events <ul style="list-style-type: none"> • Technical Program Committee Member of the International Conference on Advances in Cloud Computing (ACC-2012), Bangalore, India, July 26-28, 2012. • Technical Program Committee Member of the International Workshop on Collaborative Cloud (CollabCloud 2012), in conjunction with the 8th International Conference on Collaborative Computing: Networking, Applications and Worksharing, Pittsburgh, PA, USA, October 14-17, 2012.

- Cyber Co-Chair of the 12th IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing (CCGrid 2012), Ottawa, Canada, May 13-16, 2012.
- Program Committee Member of the 1st International Workshop on Cloud Computing and Scientific Applications (CCSA 2011), Melbourne, Australia, December 5-7, 2011.
- Local Organizing Committee Member of the 4th IEEE/ACM International Conference on Utility and Cloud Computing (UCC 2011), Melbourne, Australia, December 5-7, 2011.
- Technical Program Committee Member of the 6th International Workshop on Using P2P, Grid and Agents for the Development of Content Networks (UPGRADE-CN 2011), in conjunction with the 11th IEEE/ACM Symposium on Cluster, Cloud and Grid Computing (CCGrid 2011), Newport Beach, CA, USA, May 23-26, 2011.
- Program Committee Member of the 3rd IEEE International Workshop on Internet and Distributed Computing Systems (IDCS 2010), Melbourne, Australia, September 1-3, 2010.
- Local Organizing Committee Member of the 10th IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing (CCGrid 2010), Melbourne, Australia, May 17-20, 2010.

Peer Reviews for Journals and Conferences

- IEEE Transactions on Parallel and Distributed Systems (TPDS), IEEE CS Press.
- IEEE Transactions on Industrial Informatics (TII), IEEE CS Press.
- Future Generation Computer Systems (FGCS), Elsevier.
- Concurrency and Computation: Practice and Experience (CCPE), Wiley Press.
- Software: Practice and Experience (SPE), Wiley Press.
- The International Journal of Science and Technology (Scientia Iranica), Elsevier.
- The Journal of Systems and Software (JSS), Elsevier.
- The Journal of Parallel and Distributed Computing and Networks (PDCN), ACTA Press.
- The International Journal of Cloud Computing (IJCC), Inderscience.
- The International Journal of Computer and Telecommunications Networking (COMNET), Elsevier.
- The Journal of Network and Computer Applications (JNCA), Elsevier.
- The 17th IEEE International Conference on High Performance Computing (HiPC 2010), Goa, India, December 19-22, 2010.

Other Activities

- Treasurer of the Postgraduate Group at the Department of Computing and Information Systems, the University of Melbourne, Australia, 2010 – 2011.
- Non-Executive Committee Member of the Postgraduate Group at the Department of Computing and Information Systems, the University of Melbourne, Australia, 2009 – 2011.
- Postgraduate Seminar Coordinator at the Department of Computing and Information Systems, the University of Melbourne, Australia, 2009 – 2010.

LANGUAGES

- English – fluent.
- Russian – native speaker.

REFERENCES

Available upon request