# Konstantin Knyazkov

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## Employment

**Scientific Researcher and Software Engineer** — **ITMO University, eScience Research Institute** — **Fall 2009 – Fall 2015**
http://en.escience.ifmo.ru/

— Proposed a unified approach for description of software modules and workflows (WF) in distributed cloud computing environments. Implemented the technology of WF development and execution within the CLAVIRE platform. The technology contains of two DSL's, WF interpretation service, infrastructural services and web UI for WF execution. Proposed and implemented interactive workflow principles, and a prototype of interactive simulation environment.
— Developed the agent-based simulation framework, implemented a model for distributed traffic simulation, carried out its performance optimization and profiling. Conducted a number of studies using the traffic model in order to investigate the efficiency of various driver's decision support systems within a city evacuation scenario.
— Carried out and led studies on traffic data analysis in two directions: evaluating of dynamic ambulance routing in St. Petersburg, and flight tickets price behavior analysis for Russian market based on the data from aggregation services.
— Performed validation of a new version of water level forecasting model based on an ensemble of hydro meteorological models. The project was implemented within the contract with BCC for the Saint Petersburg Dam.
— Established collaboration with researchers from the Federal Almazov North-West Medical Research Centre on the early stage of project on development of clinical decision support system. Implemented the data acquisition infrastructure from medical information system.
— Participated on my own initiative in research studies connected to evolutionary computations domain: evolutionary approach to optimization of WF scheduling and structural optimization of detectors layout within an airport.
— Developed and taught lectures on software systems' architecture, traffic simulation, scientific visualization, and master-classes on development of distributed applications with web-services for eScience (WCF), agent-based simulation.
— Supervised research of master students.
— Have 33 publications in conference proceedings and journals, 16 of them are in English and indexed in Scopus or in Web of Science. Presented research findings in 6 international conferences and workshops.

**Summer Intern** — **Intel Corporation** — **Summer 2008**
— Implemented the internal project for the compiler QA tools team.

**Technician** — **Altai State Technical University** — **Fall 2006 – Summer 2009**
— Technical support of university's computer labs, system administration, installation of the university's Ethernet network.

## Education

**Saint Petersburg** — **ITMO University** — **Fall 2009 – Fall 2012**
— Ph.D. in Computer Science (2012)
— Thesis: "Composite applications development technology with the use of domain-specific program modules"

**Barnaul** — **Altai State Technical University** — **Fall 2004 – Summer 2009**
— MSc in Software engineering (Specialist, 5 years), diploma with honors
— Thesis: "Technology and Framework for Distributed Systems Development based on the Active Object Concept"

**Moscow** — **Moscow State University** — **Summer 2010**
— Summer School on High Performance Computing

**Moscow** — **Microsoft Research and Moscow State University** — **Summer 2009**
— Summer School on High Performance Computing

**Novosibirsk** — **Intel Corporation and Novosibirsk State University** — **Summer 2008**
— Summer School on High Performance Computing

## Technical Experience

### Languages, Technologies, Tools

— C#, Java, Python, JavaScript, Ruby, R, SQL, C/C++, MATLAB, Erlang, XML, XSLT, HTML, CSS
— WCF, MEF, WPF, XNA, SciPy, Django, scrapy, processing, Shiny, ggplot2, d3js, OpenMP, MPI, pthreads, protobuf, ZeroMQ
— Visual Studio, Resharper, dotTrace, TeamCity, Intellij Idea, Ant, PyCharm, Gnuplot, RStudio, Hadoop, IPython, QGis, Microsoft Visio, GIT, SVN, MongoDB, SQLite, MSSQL, PostgreSQL, MySQL, Gephi, NetLogo, Jenkins, TeX

## PUBLICATIONS


1. Knyazkov, K. V., Kovalchuk, S. V., Tchurov, T. N., Maryin, S. V., & Boukhanovsky, A. V. (2012). CLAVIRE: e-Science infrastructure for data-driven computing. Journal of Computational Science, 3(6), 504-510.
2. Knyazkov, K. V., Nasonov, D. A., Tchurov, T. N., & Boukhanovsky, A. V. (2013). Interactive workflow-based infrastructure for urgent computing. Procedia Computer Science, 18, 2223-2232.
3. Knyazkov, K. V., & Kovalchuk, S. V. (2014). Modeling and Simulation Framework for Development of Interactive Virtual Environments. Procedia Computer Science, 29, 332-342.
4. Kovalchuk, S. V., Smirnov, P. A., Knyazkov, K. V., Zagarskikh, A. S., & Boukhanovsky, A. V. (2013). Knowledge-based expressive technologies within cloud computing environments. arXiv preprint arXiv:1312.7688.
5. Nasonov, D., Butakov, N., Balakhontseva, M., Knyazkov, K., & Boukhanovsky, A. V. (2014). Hybrid Evolutionary Workflow Scheduling Algorithm for Dynamic Heterogeneous Distributed Computational Environment. In International Joint Conference SOCO'14-CISIS'14-ICEUTE'14 (pp. 83-92). Springer International Publishing.
6. Ivanov, S. V., & Knyazkov, K. V. (2014). Evaluation of in-vehicle Decision Support System for Emergency Evacuation. Procedia Computer Science, 29, 1656-1666.
7. Karbovskii V.A., Ivanov S.V., Knyazkov K.V. A Multi-agent Simulation Of Human Behavior During Emergency Evacuations With In-vehicle Decision Support System // WIT Transactions on Information and Communication Technologies - 2014, Vol. 56, pp. 635-643
8. Knyazkov, K., Balakhontceva, M., & Ivanov, S. (2014). TOWARDS A FRAMEWORK FOR SIMULATION-BASED EVALUATION OF PERSONAL DECISION SUPPORT SYSTEMS FOR FLOOD EVACUATION. 14th SGEM GeoConference on Informatics, Geoinformatics and Remote Sensing, 1(SGEM2014 Conference Proceedings, ISBN 978-619-7105-10-0/ISSN 1314-2704, June 19-25, 2014, Vol. 1), 883-894.
9. Nasonov, D., Visheratin, A., Knyazkov, K., & Kovalchuk, S. INTERACTIVE E-SCIENCE CYBERINFRASTRUCTURE FOR WORKFLOW MANAGEMENT COUPLED WITH BIG DATA TECHNOLOGY.
10. Lantseva, A., Mukhina, K., Nikishova, A., Ivanov, S., & Knyazkov, K. (2015). Data-driven Modeling of Airlines Pricing. Procedia Computer Science, 66, 267-276.
11. Kovalchuk, S. V., Knyazkov, K. V., Syomov, I. I., Yakovlev, A. N., & Boukhanovsky, A. V. (2015). Personalized Clinical Decision Support with Complex Hospital-Level Modelling. Procedia Computer Science, 66, 392-401.
12. Butakov, N., Chuprova, Y., Knyazkov, K., Shindyapina, N., & Boukhanovsky, A. (2015). Evolutionary-based Framework for Optimizing the Spread of Information on Twitter. Procedia Computer Science, 66, 287-296.
13. Butakov, N., Nasonov, D., Knyazkov, K., Karbovskii, V., & Chuprova, Y. (2015). The multi-agent simulation-based framework for optimization of detectors layout in public crowded places. Procedia Computer Science, 51, 522-531.
14. Knyazkov, K., Derevitsky, I., Mednikov, L., & Yakovlev, A. (2015). Evaluation of Dynamic Ambulance Routing for the Transportation of Patients with Acute Coronary Syndrome in Saint-petersburg. Procedia Computer Science, 66, 419-428.
15. Kovalchuk, S. V., Krikunov, A. V., Knyazkov, K. V., & Boukhanovsky, A. V. (2015). On Classification Issues within Ensemble-Based Complex System Simulation Tasks. arXiv preprint arXiv:1510.00292.
16. Shmelev, V. A., Dukhanov, A. V., Knyazkov, K. V., & Ivanov, S. V. (2016). Bus scheduling in dynamical urban transport networks with the use of genetic algorithms and high performance computing technologies. In Knowledge, Information and Creativity Support Systems (pp. 97-104). Springer International Publishing.