

## Ramon Antonio RODRIGES ZALIPYNIS, *curriculum vitae*

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R.A. Rodrigues Zalipynis is currently an associate professor at Higher School of Economics (HSE), Moscow. His R&D interests include distributed systems, big data, databases, data management, geospatial data, geographic information systems, Cloud Computing, and Earth remote sensing.

Antonio's PhD dissertation was devoted to innovative methods and techniques for accessing large volumes of Earth remote sensing data, their analysis and visualization. Antonio received CRDF Global grant (~77,000 USD, 2011–2013) which supported his efforts in the development of Climate Wikience – unique hardware-software complex to store, access, visualize and analyze large volumes of climate reanalysis and Earth remote sensing data: [www.wikience.org](http://www.wikience.org), short video (2 min.): [YouTube](#), brochure: [PDF](#).

The resulting software products from Antonio's PhD – Climate Wikience and ChronosServer are copyrighted (please, refer to the "Copyrights" section). Both systems are currently operational and maintained by R.A. Rodrigues Zalipynis: [www.wikience.org](http://www.wikience.org) and <http://www.wikience.org/chronosserver/>

R.A. Rodrigues Zalipynis developed [ChronosDB](#) – innovative [array DBMS](#) which outperforms SciDB by up to 75× on average. ChronosDB is always faster and can outperform SciDB by up to 1034×. SciDB is the only freely available distributed array DBMS to date, developed by [Paradigm4](#) and supervised by [M. Stonebraker](#).

R.A. Rodrigues Zalipynis developed and teaches the course "Geoapplications development" at HSE (in English, 2015–2019) that gives programming experience with geospatial data: <http://rgeo.wikience.org>.

R.A. Rodrigues Zalipynis served as an expert for Open International Student Research Paper [Competition](#) held by HSE (computer science section, 2015–2019). He also passed the competitions and was selected to the HSE Group of High Professional Potential during 2016–2017 (includes about 100% of monthly salary increase for a year). Antonio served as a shadow PC member for EuroSys2020 (Core A conference).

Antonio is an ACM and IEEE Member ([rodrigues@acm.org](mailto:rodrigues@acm.org), [rodrigues@ieee.org](mailto:rodrigues@ieee.org)).

### Projects

[ChronosDB](#) innovative [array DBMS](#) that outperforms SciDB by up to 75× on average. SciDB is the only freely available distributed array DBMS to date, developed by [Paradigm4](#) and [M. Stonebraker](#)

[Climate Wikience](#) a novel software ecosystem to store, access, visualize and analyze large volumes of climate reanalysis and Earth remote sensing data: [www.wikience.org](http://www.wikience.org), [video \(2 min.\)](#), brochure: [PDF](#)

[Chronos Server](#) distributed, high performance raster data dissemination server for thousands of concurrent clients, see <http://www.wikience.org/chronosserver/> and Selected Publications section

### Teaching (the courses are given in English, developed from scratch by R.A. Rodrigues Zalipynis)

Geoapplications development	2015–18, gives programming experience with geospatial data, <a href="#">page</a> and <a href="#">promo-video (≈3 minutes)</a>
Computer Networks	2019, the 'Best Course for Broadening Horizons and Diversity of Knowledge and Skills' and 'Best Course for New Knowledge and Skills', <a href="#">page</a> and <a href="#">promo-video (≈3 minutes)</a>
Database Systems	2021, teaches to understand, design, and build DBMS <a href="#">promo-video (≈3 minutes)</a>

### Education

2013	Ph.D. Environmental Security/Ecological Safety	Ministry of Education of Ukraine
2008	M.S. Computer Science, <b>Honors Diploma</b>	Donetsk National Technical University, Ukraine
2007	B.S. Computer Science, <b>Honors Diploma</b>	Donetsk National Technical University, Ukraine

The PhD dissertation proposed innovative approaches for accessing large volumes of Earth remote sensing data, their analysis and visualization (Projects section: Climate Wikience and ChronosServer).

The M.S. dissertation proposed a new multilevel graph partitioning algorithm implemented using MPI. It achieves up to 42% improvement in partitioning cost for some graphs compared to multilevel algorithms of METIS – one of the best graph partitioning software: [PDF poster](#) (in Russian), [M.S. page](#).

### Positions

2015 – current	Associate Professor, Faculty of Computer Science, National Research University Higher School of Economics, Moscow, Russian Federation: <a href="http://www.hse.ru/en/staff/rodrigues">http://www.hse.ru/en/staff/rodrigues</a> <i>Employed as a Highly Qualified Specialist</i> (according to the classification of Russian Fed.)
2014 – 2015	Senior Researcher, Belgorod National Research University, Belgorod, Russian Federation
2013 – 2014	Associate Professor, Faculty of Computer Science and Technology, Donetsk National Technical University (DNTU), Ukraine
2009 – 2013	Assistant Lecturer, Faculty of Computer Science and Technology, DNTU, Ukraine

R.A. Rodrigues Zalipynis is also the head of the [Geoinformatics Research Group](#) (2018–current) at HSE.

### Copyrights

R.A. Rodrigues Zalipynis «Computer Program Climate Wikience» <http://www.wikience.org/> and «Computer Program ChronosServer» <http://www.wikience.org/chronosserver/> certificates of copyright registration №56360 and №56359 respectively on 05.09.2014, Ukraine (valid in all countries of [Berne Convention](#)).

### Awards (resulted from highly selective competitions)

- 2020 **Best Teacher** of Higher School of Economics, includes about 200% of monthly salary increase for a year due to being the **Best Teacher for 3 consecutive years 2018, 2019, 2020** [link](#)
- 2019 **Best Teacher** of Higher School of Economics, includes about 200% of monthly salary increase for a year due to being the **Best Teacher for 3 consecutive years 2017, 2018, 2019**, [link](#)
- 2018 **Best Teacher** of Higher School of Economics, about 100% of monthly salary increase for a year, [link](#)
- 2017 **Best Teacher** of Higher School of Economics, about 100% of monthly salary increase for a year, [link](#)
- 2011 **Best Scientist** of Donetsk National Technical University (the 95<sup>th</sup> Solemn Anniversary)
- 2005 University Letter of Commendation for “Excellence in academic progress and active research”

### Selected scientific publications ([DBLP](#) and [ACM DL](#) profiles, extended publications list: [link](#))

1. **R.A. Rodrigues Zalipynis**. ChronosDB: Distributed, File Based, Geospatial Array DBMS. *PVLDB*, 11(10): 1247-1261, 2018. [DOI](#) [PDF](#) The only full paper at [VLDB](#) with Russian affiliation for the last 10 years (2009–2018) and the first from the Higher School of Economics.
  2. **R.A. Rodrigues Zalipynis**. ChronosDB in Action: Manage, Process, and Visualize Big Geospatial Arrays in the Cloud. *SIGMOD 2019*, P. 1985-1988. [DOI](#) The 7th paper at SIGMOD with Russian affiliation for all years of the [SIGMOD](#) conference (1975–2019, 45 years) and the 1st from the Higher School of Economics.
  3. **R.A. Rodrigues Zalipynis**. BitFun: Fast Answers to Queries with Tunable Functions in Geospatial Array DBMS. *PVLDB*, 13(12): 2909-2912, 2020. [DOI](#) [PDF](#) The 2nd paper with Russian Affiliation at [VLDB](#) for the last 10 years (2010–2020) and the 2nd from the HSE (the info about the 1st paper is above).
  4. **R.A. Rodrigues Zalipynis**. Distributed In Situ Processing of Big Raster Data in the Cloud, *LNCS*, vol. 10742, P. 337-351, 2018. [DOI](#)
  5. **R. A. Rodrigues Zalipynis**, Pozdeev E., Bryukhov A. Array DBMS and Satellite Imagery: Towards Big Raster Data in the Cloud, *LNCS*, Vol. 10716, P. 267-279, 2018. [DOI](#) **Best Talk Award:** [PDF](#)
  6. **R.A. Rodrigues Zalipynis**. ChronosServer: real-time access to “native” multi-terabyte retrospective data warehouse by thousands of concurrent clients. *Inf., Cyb. and Comp. Eng.*, 14(188):151–161, 2011 [LINK](#)
- Antonio also received 6 best talk awards at international conferences and a Certificate of Appreciation ([PDF](#)) from the [International Journal of Digital Earth](#) (Q1). He also was the chair of the “Data mining methods” section of the 1st Intl. Conf. “Information management systems and computer monitoring” (2010, Donetsk).

### Selected grants and projects

1. **P.I.**, Developing new distributed methods for processing large volumes of raster data, Russian Foundation for Basic Research (RFBR), Grant #16-37-00416, 900 000 RUB, 01/2016–12/2017.
2. **Chief executive & Architect**, Discovery of synoptic patterns of climate variability and change using data mining and high performance computing, U.S. Civilian Research and Development Foundation (CRDF), 76,780 USD, 02/2011–05/2013. Antonio developed the grant proposal on his own.
3. **Researcher**, Non-stationarity and fractality of dynamics in the evolution of complex systems: applications to physics of the Earth and the Sun, Russian Science Foundation (RSF), Grant #17-11-01052, 18M RUB (approx. 277K USD), 05/2017–12/2019.
4. **Expert**. Analysis and community monitoring of surface water quality in Lugansk region, Small Grants Program of GEF in Ukraine (<https://www.sgp.undp.org/>), 49,743 USD, 2013–2014, grant issued for NGO «Donets». [Project page on UNDP site](#). Monograph (in Ukrainian): [link](#)
5. **Analyst**, Development of Eco-Monitoring Program of Lugansk Oblast, Lugansk Regional Government, 300 000 UAH, 02/2010 – 12/2010.
6. **Researcher & Developer**, Automated Complex for Meteorological Observations and Environmental Pollution Control, Donetsk Regional Govt., 500 000 UAH, 01/2008 – 12/2009.
7. **Developer**, Database of Budget Organizations for Energy Consumption of Donetsk City, Donetsk Regional Government, 650 000 UAH, 06/2007–12/2009.
8. **Researcher & Developer**, Environment Monitoring System for Donetsk Region, Donetsk Regional Government, 500 000 UAH, 12/2007 – 12/2008.

### Selected competitions

1. **Won twice (2008 and 2009)** [Zavtra.UA scholarship program](#) – All-Ukrainian competition for yearly stipend. It is the first Ukrainian, privately funded, nation-wide initiative for gifted youth support.
2. **1st prize, 2008, the final** of All-Ukrainian Research Competition “Informatics, computer science and automation”, Sebastopol, Ukraine. This is a highly competitive program under the direction of the Ministry of Education and Science of Ukraine, in which all Ukrainian universities participate.
3. **2nd prize, 2008, in the final of Microsoft** All-Ukrainian Competition in High Performance Computing Research Projects (Kiev, Ukraine).

### Continuing Education

08.2020–09.2020 course "Psychological Peculiarities of Teaching", National Research University Higher School of Economics.

12.02.2015–14.05.2015 course "Modern Climate Change", University of Missouri, Columbia, USA (professor A. Lupo), internal, exam, certificate № 10201, [PDF](#)

2009–2010, Sun Microsystems (now Oracle): Fundamentals of the Java (TM) Programming Language (SL-110-SE6), Object-Oriented Analysis and Design Using UML (OO-226), Java (TM) Programming Language

(SL-275-SE6), Developing GUI with Java based on Swing (DTW-3400), Developing Mobile Phone Applications with J2ME (TM) Technology (DTJ-365), Developing Innovative Multimedia JavaFX Applications (DTJ-2510).

2008, Microsoft: «MPI Programming with C++, High Performance Computing, and Deploying, Managing, and Maintaining Microsoft (R) Windows (R) Compute Cluster Server 2003.»