Jana Giceva

Contact Information

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Research Interests

Systems support for data analytics with emphasis on modern hardware, rack-scale data processing, resource management on multicore machines, databases/operating system co-design, and hardware/software co-design.

Academic Positions

Assistant Professor, Computer Science **10/2017 – present**
Department of Computing, Imperial College London

Education

Ph.D., Computer Science **07/2011 – 03/2017**
Systems Group, ETH Zürich, Switzerland
Advisor: Gustavo Alonso
Thesis: *Database/Operating System Co-design*
ETH Medal award for outstanding PhD dissertation

M.Sc., Computer Science **09/2009 – 05/2011**
ETH Zürich, Switzerland

B.Sc., Computer Science **09/2006 – 05/2009**
Jacobs University Bremen, Germany

Professional Experience

Microsoft Research, Silicon Valley, California USA
Research intern **05/2014 – 08/2014**
Worked on better automatic memory management in runtime engines for the Naiad big data system. Contributed to the design of the system, and worked on the automatic inferral of typed regions.

Oracle Labs, Belmont, California USA
Research intern **06/2013 – 09/2013**
Proposed 'partition-reduce SQL' operators, as a common method for enhancing existing SQL operators with hardware tuned partitioning primitives. Explored its applicability for Oracle's Exadata.

Systems Group, ETH Zürich, Zürich, Switzerland
Research intern **06/2010 – 09/2010**
Internship as part of the MICS internship program. Explored and evaluated a data processing architecture on multicore machines for a mix of workloads. The results were published at EuroSys.

Digital Enterprise Research Institute, Galway, Ireland
Research intern **06/2008 – 09/2008**
Analysis of rhetorical aspects in mathematical documents. Implementated appropriate mark-up to support the new elements, and a visualization framework.

Honors and Awards

ETH medal for outstanding PhD dissertation in the Department of Computer Science, 2018

European Google Ph.D. Fellowship for Operating Systems, 2014

Best Poster Award "Databases and Operating Systems: Friends or Foes?", EuroSys 2012

Jacobs University Bremen President's list for exceptional academic results (2006/2007)

First prizes in mathematical Olympiads on national level (2001–2005)

Participation and bronze medal in the Balkan Mathematical Olympiads in 2004, 2001 respectively

Community Service

Chair:
SIGMOD Student Research Competition 2019, EuroSys Travel Grants 2019, SIGMOD SRC 2018

Program committee member:
SIGMOD 2019, NSDI 2019, EDBT demo 2019, ICDE industry 2018, EuroSys Doctoral Workshop 2018, SIGMOD Demo 2017, ISCA's Workshop on Architecture Support for Big Data 2017

Shadow PC:
11th European Conference on Computer Systems (EuroSys'16)

Organizer:
"Career panel for women in computer science" at ETH Zürich (Spring 2016, Spring 2015)

Teching Experience

Professor at **Imperial College London** **01/2018 – to date**
"Computer Architecture" (Spring 2018), co-teaching with Wayne Luk
"Topics in Computing" (Spring 2018), seminar-type lecture taught by multiple faculty

Students at **Imperial College London**
Co-advising PhD students: Domagoj Margan (with Peter Pietzuch)
Master Thesis: Daniel Grumberg (Nov 2017–Jun 2018), Florian Emile (Nov 2017–Jun 2018)

Teaching Assistant at **ETH Zürich** **09/2011 – 02/2016**
"Advanced Systems Lab" (Fall 2011 – 2015), head TA in 2014, 2015
"Data Modeling and Databases" (Spring 2015)
"Introduction to Parallel Programming" (Spring 2014)

Thesis Supervisor at **ETH Zürich**
Master Thesis: Alessandro Dovis (Feb–July 2015) and Zaheer Chothia (Jan–June 2013)

Teaching Assistant at **Jacobs University Bremen** **09/2007 – 12/2008**
"General Computer Science I/II" (Fall 2007, Spring 2008)
"Computer Architecture and Operating Systems" (Fall 2008)

Publications

Darko Makreshanski, **Jana Giceva**, Claude Barthels, and Gustavo Alonso. BatchDB: Efficient Isolated Execution of Hybrid OLTP+OLAP Workloads for Interactive Applications, *Proceedings of the 2017 ACM SIGMOD International Conference on Management of Data*

Kaan Kara, **Jana Giceva**, and Gustavo Alonso. FPGA Based Data Partitioning, *Processings of the 2017 ACM SIGMOD International Conference on Management of Data*

Jana Giceva, Gerd Zellweger, Gustavo Alonso, and Timothy Roscoe. Customized OS support for data processing, *Proceedings of the 12th International Workshop on Data Management on New Hardware (ACM DaMoN 2016)*

Ionel Gog, **Jana Giceva**, Malte Schwarzkopf, Kapil Vaswani, Dimitrios Vytiniotis, Ganesen Ramalingam, Manuel Costa, Derek G. Murray, Steven Hand, and Michael Isard. Broom: Sweeping Out Garbage Collection from Big Data Systems, *Proceedings of the 15th USENIX Conference on Hot Topics in Operating Systems (HotOS 2015), acceptance rate 31%.*

Jana Giceva, Gustavo Alonso, Timothy Roscoe, and Tim Harris. Deployment of Query Plans on Multicores, *Proceedings of the VLDB Endowment, Volume 8, Issue 3, 2014, acceptance rate 21%.*

Jana Giceva, Tudor-Ioan Salomie, Adrian Schüpbach, Gustavo Alonso, and Timothy Roscoe. COD: Databases/Operating System Co-Design, *Online Proceedings of the 6th Biennial Conference on Innovative Data Systems Research (CIDR), 2013*

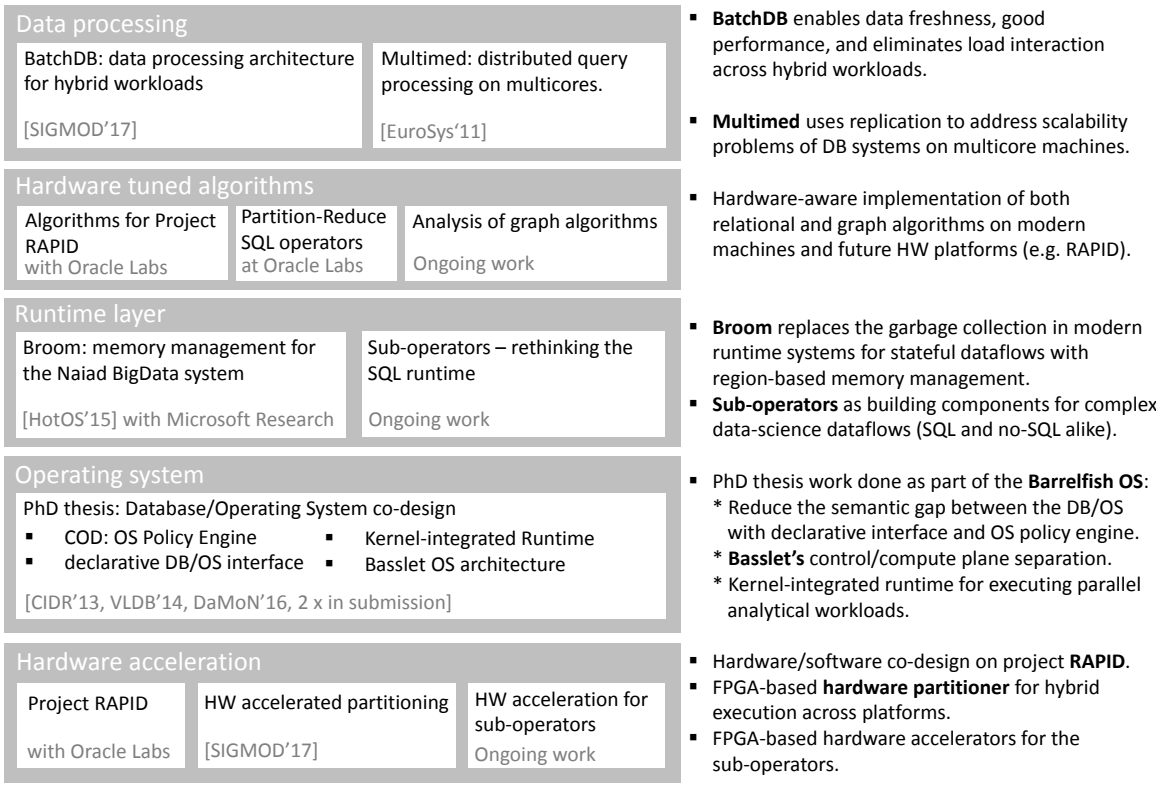
Jana Giceva, Adrian Schüpbach, Gustavo Alonso, and Timothy Roscoe. Towards Database/Operating system co-design, *Second Workshop on Systems for Future Multicore Architectures (SFMA), 2012*

Tudor-Ioan Salomie, Ionut Emanuel Subasu, **Jana Giceva**, and Gustavo Alonso. Database Engines on Multicores. Why Parallelize When You Can Distribute?, *Proceedings of the Sixth Conference on Computer Systems (EuroSys 2011), acceptance rate 15%*

Jana Giceva, Christoph Lange, and Florian Rabe. Integrating Web Services into Active Mathematical Documents, MKM/CICM 2009 *Proceedings for Intelligent Computer Mathematics, 16th Symposium, Calculemus 2009, 8th International Conference, MKM 2009, Part of CICM 2009*

Project Experience

Contributed to and/or co-lead several large-scale projects implemented in C, C++, and Java.



- **BatchDB** enables data freshness, good performance, and eliminates load interaction across hybrid workloads.
- **Multimed** uses replication to address scalability problems of DB systems on multicore machines.
- Hardware-aware implementation of both relational and graph algorithms on modern machines and future HW platforms (e.g. RAPID).
- **Broom** replaces the garbage collection in modern runtime systems for stateful dataflows with region-based memory management.
- **Sub-operators** as building components for complex data-science dataflows (SQL and no-SQL alike).
- PhD thesis work done as part of the **Barrelfish OS**:
  * Reduce the semantic gap between the DB/OS with declarative interface and OS policy engine.
  * **Basslet's** control/compute plane separation.
  * Kernel-integrated runtime for executing parallel analytical workloads.
- Hardware/software co-design on project **RAPID**.
- FPGA-based **hardware partitioner** for hybrid execution across platforms.
- FPGA-based hardware accelerators for the sub-operators.

Invited Talks

Active heterogeneous hardware and its impact on system design
Invited talk at the Workshop on Data Management on New Hardware (DaMoN) (June 2018)

Revisiting the system stack for data processing on modern hardware
Department Seminar Talk at University of Cambridge (April 2018)

Customizing the system stack for data processing on modern hardware
Cornell (January 2017), Yale (February 2017), MSR Redmond (February 2017), Simon Fraser University (February 2017), University of Maryland College Park (February 2017), University of Chicago (February 2017), UC Santa Cruz (February 2017), Boston University (February 2017), Purdue (March 2017), Imperial College London (March 2017), Georgia Tech (March 2017), Rice University (March 2017), University of Illinois Urbana Champaign (March 2017), MSR Cambridge (April 2017), University of Washington (April 2017)

OS support for data processing on modern hardware
TU Dortmund colloquium talk (October 2016)

Customized operating system support for data processing
Workshop on Data Management on New Hardware (DaMoN) (June 2016), Oracle Labs (June 2016),

IBM Research Almaden (June 2016), HPE Labs (June 2016), Stanford (June 2016), VMWare (June 2016), UC Berkeley (August 2016), Microsoft Research (August 2016), MIT (November 2016)

Basslet: an OS runtime for parallel data processing
Workshop on Multicore and Rack-Scale computing (MaRS), April 2016.

Rethinking the interface between Databases and Operating Systems
Dagstuhl Seminar on Rack-Scale Computing (October 2015)

Deployment of Query Plans on Multicores
VLDB (September 2015), Oracle Labs (August 2015)

Rack-scale data processing
Workshop for Rack-scale computing (WRSC) (April 2015)

Databases and Operating Systems: friends or foes?
Systems for Future Multicore architectures (SFMA) (April, 2012)

THIRD-PARTY FUNDING

Google PhD Scholarship for Operating Systems **awarded in 2014**
Funding for the last three years of my PhD CHF 240'000.

USENIX travel grant **awarded in 2015**
Covered my registration fees, hotel and transport for HotOS 2015 USD 2'000.

REFERENCES

Available upon request.