

OLEKSANDR ZINENKO

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📄 Personal Information

DoB March 24, 1990 in Kyiv, Ukraine.
Languages English, French, Russian, Ukrainian.

👛 Professional Experience

2016–now **Research Engineer / Post-doctoral Fellow**
Inria (French National Institute for Informatics and Automation) / École Normale Supérieure.
Leading research and development of (semi-) automatic program optimizers (C).
Developing a highly efficient backend for deep learning frameworks (C++/Python).

2013–2016 **Research Assistant**
Inria (French National Institute for Informatics and Automation).
Developing and evaluating interactive graphical software for program optimization (C++). Conducting studies as a part of thesis project. Communicating research results and teaching.

2012–2013 **Computer Engineer**
High-performance Computing Center, National Technical Univ. of Ukraine.
Developing highly optimized parallel software (MPI, OpenMP) for clusters.
Contributing to parallel libraries and production compilers.

🎓 Education

2013–2016 **PhD in Computer Science**
Université Paris-Saclay, Laboratory for Research in Informatics.
Thesis: «Interactive Program Restructuring».

2011–2013 **Master in Computer Science**
National Technical University of Ukraine "Kyiv Polytechnic Institute".

2007–2011 **Bachelor in Computer Engineering**
National Technical University of Ukraine "Kyiv Polytechnic Institute".

</> Programming Skills

Languages C, C++ (C++17, Qt, Boost), Python, Java SE.
Parallelism CUDA, OpenMP, MPI, threads.
Web HTML, JavaScript (WebGL, D³, jQuery).
Misc. Languages and Compilers, Static Analysis, User Studies, Algorithms and Design Patterns, Systems Design.

👥 Community Service

Committees Organizing Committee for PLDI 2017.
Program Committee for IMPACT 2017, 2018.
Program Committee Chair for IMPACT 2019.

Reviews Reviewer for CHI 2015, 2016, 2017; UIST 2014, 2015; CC 2016, 2017 conferences; TACO journal; PARMA-DITAM 2015 and IMPACT 2016, 2017, 2018 workshops.

🔬 Research Interests

Improving both the programmer productivity and the program performance in specific domains (machine learning, simulation) with automatic, configurable and learnable tools.

📄 Publications

- N. Vasilache, O. Zinenko, T. Theodoridis, P. Goyal, Z. DeVito, W. Moses, A. Cohen. **Tensor Comprehensions: Framework-Agnostic High-Performance Machine Learning Abstractions.** arXiv:1802.04730
- O. Zinenko, S. Verdoolaege, C. Reddy, J. Shirako, T. Grosser, V. Sarkar, A. Cohen. **Modeling the Conflicting Demands of Parallelism and Spatial/Temporal Locality in Affine Scheduling.** In proc. of Intl. Conf. on Compiler Construction (CC), 2018, 3-14.
- O. Zinenko, S. Verdoolaege, C. Reddy, J. Shirako, T. Grosser, V. Sarkar, A. Cohen. **Unified Polyhedral Modeling of Temporal and Spatial Locality** Inria Research Report RR-9110, 2017.
- O. Zinenko, C. Bastoul, S. Huot. **Visual Program Manipulation in the Polyhedral Model.** ACM Trans. on Architecture and Code Optimization (TACO), 2017.
- L. Bagnères, O. Zinenko, S. Huot, C. Bastoul. **Opening Polyhedral Compiler's Black Box.** In proc. of Intl. Symp. on Code Generation and Optimization (CGO), Barcelona, Spain, Mar. 2016.
- O. Zinenko, C. Bastoul, S. Huot. **Manipulating Visualization, Not Codes.** In proc. of Intl. Workshop on Polyhedral Compilation Techniques (IMPACT), in conjunction with HiPEAC, Amsterdam, The Netherlands, Jan. 2015.
- O. Zinenko, S. Huot, C. Bastoul. **Clint: A Direct Manipulation Tool for Parallelizing Compute-Intensive Program Parts.** In proc. of Intl. Symp. on Visual Languages and Human-Centric Computing (VL/HCC), Melbourne, Australia, Jul. 2014.

👉 Projects



Tensor Comprehensions ozinenko.com/tc
High-level language for tensor operations, targeted at deep learning applications, JIT-compiled into efficient CUDA codes with polyhedral optimization.



Clint ozinenko.com/clint
Interactive program visualization for performance analysis and parallelization. Explains and replays compiler choices, and lets the user modify a C program graphically.



Polyhedral Playground playground.pollylabs.org
Serverless web-based REPL for program transformation using polyhedral analyses and linear optimization. Comes with graphics and a set of interactive tutorials.



Periscop periscop.github.io
Core libraries for polyhedral optimization: an exchange format, a C code parser and generator, a dependence analyzer and a directive-driven transformation engine.