Yurii Zakharian

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🎓 Yurii Zakharian   ⌨ yzdxdydz   in yurii-zakharian

Senior Research Scientist holding a Ph.D. degree in Mathematics specializing in Geometry/Topology, with 2+ years of AI research, 5+ years of software development experience, and a strong publication record.

Skills

- Python (2+ years), C/C++ (4+ years), C# (1 year)
- PyTorch, NumPy, SciPy, Matplotlib, Gurobi, CPLEX, CBC, TensorFlow
- Data structures and algorithms, topological data analysis, calculus, linear algebra, probability theory and statistics, time-series, optimization theory, numerical methods, discrete mathematics, topology and geometry
- Mathematical modeling in machine learning and physics, functional analysis and topology
- Independent and collaborative research skills, communication with teammates
- LaTex, git, SQL, Docker

Experience

Senior Research Scientist, *Huawei,* Moscow, Russia   2021/11 – present
- Designed graph algorithms for ML compilers, resulting in up to a **40% acceleration** in training large-scale models (e.g., LLMs) on heterogeneous devices such as CPUs and GPUs. This work led to **1 implementation** into the company's technology and **1 patent** (pending).
- Developed a detailed theoretical framework to estimate errors in neural networks for solving physics problems, including fiber optics. This work resulted in **1 preprint**.
- Collaborated with a cross-functional team to provide mathematical consulting for a computational optimization project. Developed **1 detailed roadmap** outlining strategies to address the challenge.

Software Developer, *1C-Rarus,* Moscow, Russia   2017/07 – 2021/10
- Engineered and maintained custom clearance and CRM systems for the local branch of FedEx, resulting in a **20% operational efficiency increase** and a **15% processing time reduction**.
- Developed libraries with algorithms to complement the existing framework. Languages: C/C++, SQL.

Software Developer Intern, *Macroeconomic Research Center,* Moscow, Russia   2016/11 – 2017/03
- Developed features for expired tokens removal, media player buffer reading, and diagram making without self-intersections on a sociological surveys project. Languages: C#, SQL.

Education

PhD, Mathematics, *Lomonosov Moscow State University,* Moscow, Russia   2022
🏅 WES Verified International Academic Qualifications

MSc, Applied Mathematics and Computer Science, *Lomonosov Moscow State University,* 2018 Moscow, Russia

BSc, System Analysis, *Kyiv Polytechnic Institute,* Kyiv, Ukraine   2016

Publications

+1 patent on ML compilers is currently in the registration process, filed on February 16, 2023

Yurii Zakharian, Jiexing Gao 2023
PINNs error estimates for nonlinear equations in R-smooth Banach spaces, arxiv:2305.11915

Yuriy Zakharyan 2022
Search for vector-function zeros in gauge spaces, *J. Nonlinear Convex Anal. 23:3*, 465-484,
URL

Yuriy Zakharyan, Tatiana Fomenko 2021
Coincidence Preservation for a One-Parameter Family of Pairs of Zamfirescu-Type
Multi-Valued Mappings, *Mosc. Univ. Math. Bull. 76*, 29–34, DOI:10.3103/S0027132221010095

Yuriy Zakharyan, Tatiana Fomenko 2021
Erratum to: Zero Preservation for a Family of Multivalued Functionals, and Applications to
the Theory of Fixed Points and Coincidences, *Doklady Mathematics 103*, 66,
DOI:10.1134/S1064562421010087

Yuriy Zakharyan, Tatiana Fomenko 2020
Zero Preservation for a Family of Multivalued Functionals, and Applications to the Theory of
Fixed Points and Coincidences, *Doklady Mathematics 102*, 272–275,
DOI:10.1134/S1064562420040225

Yuriy Zakharyan, Tatiana Fomenko 2020
Preservation of the Existence of Zeros in a Family of Set-Valued Functionals and Some
Consequences, *Math. Notes 108*, 802–813, DOI:10.1134/S0001434620110231

Yuriy Zakharyan, Tatiana Fomenko 2020
On Coincidence Points for a Zamfirescu Type Pair of Multi-Valued Mappings, *Mosc. Univ.
Math. Bull. 75*, 253–260, DOI:10.3103/S002713222006008X