Sergei Zinchenko

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Personal Statement

R&D engineer (**3+ years**) with strong mathematical foundations and algorithmic problem-solving skills. Olympiad winner in mathematics and cryptography. Experienced in algorithm design and building high-performance learned systems.

Experience (3+ years)

2025 2022	**Huawei** **R&D Engineer**	Novosibirsk Russia

Applied discrete optimization and deep learning to achieve ×40 faster inference and 50% higher performance in a learned system [HERO], outperforming all existing methods. Designed (on PyTorch) a neural [architecture] for *tree-structured* data. Built an experimentation [platform] reducing iteration time *from days to seconds*. Domain: database query optimization.

Invented a specialized data structure for groups of trees, achieving a [qualitative improvement] over Microsoft's big-data caching algorithm. Domain: OLAP systems.

2022 2021	**HSE (QS Top 50 in Math; HDI lab)** **DL Researcher**	Moscow Russia

Invented and implemented (on PyTorch) [SnapStar] - a lightweight ensembling method matching the accuracy of large neural networks while training only small ones. Using statistical learning theory, proved its *optimality* and *robustness*, with results published in a leading conference and journal.

Education

2024 2022	**Master's Degree in Applied Math (with honors; 4.97/5.0)** Master's Thesis: "Hint-based query optimization for databases"	NSU (QS Top 100 in Math) Russia
Courses:	Database Optimization, Deep Learning	
2022 2018	**Bachelor's Degree in Math and Computer Science (with honors; 4.97/5.0)** Bachelor's Thesis: "Neural network ensemble algorithm"	NSU (QS Top 100 in Math) Russia
Courses:	Statistical Learning, Advanced Algorithms and Data Structures	

Publications

preprint, 2025	HERO: Hint-based efficient and reliable query optimizer [paper]
preprint, 2025	The selection problem in MQO: a comprehensive survey [paper]
NN Journal (Q1), 2024	Star algorithm for neural network ensembling [paper]
ICML Workshop, 2022	SnapStar algorithm: a new way to ensemble neural networks [paper]

Activities / Achievements

Olympiads	Winner of the International Olympiad in Cryptography, 2023
	Winner of the national Olympiad in Mathematics, 2022
	Winner of the International Olympiad in Mathematics, 2019 (Open Student Contest)
Programming Contests	Ranked among top 1% worldwide in LeetCode contests
Awards	"Employee of the Year" (2024, Huawei), "Hope of the Faculty" (University, 2019)
Conferences	ISPRAS Open, SSOPT [lecture], PGBootcamp [master class], AIRI, ISSC
Summer Schools	CompTech 2022, 2021, 2020, Sirius 2021, Math. Workshop 2020, CSSR 2019

Technical Expertise

Math	Statistics, Probability Theory, Linear and Abstract Algebra, Calculus
Computer Science	Advanced Algorithms and Data Structures (Randomized and Big Data), Complexity Theory, RDBMS, OS
Technologies	Python with ML/DL stack (PyTorch, Pandas, NumPy, etc.), SQL (PostgreSQL, openGauss)