

# BADERKO MAKAR

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## ABOUT ME

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As a passionate 16-year-old Software Engineer, I leverage my interdisciplinary expertise in computer science, economics, and physics to bridge diverse perspectives and ideas of my colleagues in order to foster collaborative synergy and drive innovative solutions for impactful outcomes.

## SKILLS

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**Technical Skills** Python, C++, SQL, Classic ML, Computer Vision, Gradient Boosting, Deep Learning with PyTorch, Data Mining, LLM fine-tuning and Stochastic Optimization  
**Languages** Russian - mother tongue, English - C1 (Cambridge certificate), German - B1, Italian - A1  
**Interests** Foreign languages, mechanical engineering, reading and videography

## RESEARCH

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- Exploring Applications of State Space Models and Advanced Training Techniques in Sequential Recommendations: A Comparative Study on Efficiency and Performance - *ICOMP 2024*

## ACADEMIC ACHIEVEMENTS

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### Computer Science and AI

- National Statistics and Data Analysis Olympiad - Gold(2022), Silver(2023) and Gold(2024).  
Top-1 result (among my grade participants) in the theoretical section in 2022 and 2024  
*This is the most significant olympiad in data analysis in Russia*
- National Technological Olympiad in Artificial Intelligence - Gold(2025), top-1 result (among my grade participants)  
*This is the most significant olympiad in AI in Russia*
- AIJ Junior Contest - Winner (1st place), Computer Vision case (2023) and 5th place, Graph LLM Research case (2024)
- Big Challenges Conference on Big Data and Machine Learning - Prize-winner(2024)
- Siris.AI Confrence - Laureate for the best scientific problem solution (2023)
- Northern Eurasia Olympiad in AI - second best result in the Classic Computer Vision task (2025)
- National Technological Initiative Talent nominee - Engineering (2025), Software Engineering (2025) and AI (2025)

### Physics and Mathematics

- Atomic Industry Physics Olympiad (Rosatom) - Winner(2024), Prize-winner(2025), top-12 in the country in 2024.
- Engineering Olympiad (Applied Physics) - Prize-winner(2024) and Prize-winner(2025)
- Physics Olympiad "Step into the Future" (held by BMSTU) - Winner(2025)
- Physics Olympiad Phystech (held by MIPT) - Prize-winner(2025)
- Gas Industry Olympiad in Physics (Gazprom) - Prize-winner(2024)
- Gas Industry Olympiad in Mathematics (Gazprom) - Winner(2024), Prize-winner(2025)
- Regional Olympiad in Physics - Prize-winner(2024), Prize-winner(2025)

### Economics and Business

- WEC Continental Economics Cup - 2nd place in Europe in Business Case Analysis section (scored 190/200) and a Bronze medal overall
- The Highest Probe Olympiad in Economics (held by HSE) - Prize-winner(2025)
- The Highest Probe Olympiad in Business Studies (held by HSE) - Prize-winner(2025)
- Regional case championship in economics and entrepreneurship - Prize-winner(2025)
- Regional Olympiad in Economics - Prize-winner(2024), Prize-winner(2025)

### Foreign languages

- The Highest Probe Olympiad in English Language (held by HSE) - Winner(2025)
- Regional Olympiad in English Language - Prize-winner(2023), Winner(2024) and Prize-winner(2025)
- Regional Olympiad in German Language - Prize-winner(2025)
- Cambridge Advanced English Certificate - C1 level (2022)

## EDUCATION

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### Center for Teacher Excellence School

Physics Major, GPA 5.0/5.0

(2024 - Present)

- Best (top-1) school in Russia by the number of National Olympiad awardees with highly-competitive admission process
- Enrolled in elective courses in Advanced Maths, Advanced Calculus and two different courses in olympiad-level Physics
- Awarded a merit-based tuition fee scholarship

### "Vybor" (Choice) Private School

GPA 5.0/5.0

(2015 - 2024)

- Took electives in Statistics, Advanced Maths, Computer Science, Advanced Physics, English and German languages
- Full score on the middle school school leaving qualification exams in Mathematics and Computer Science

Granted merit-based admission into the world's best (top-1) International Baccalaureate school (Letovo school).

### Additional Studies

- Summer competitive programming training at MIPT  
During this intensive course I learned dynamic programming, graph traversals, data structures and combinatorics Placed 2nd in a final team-based algorithms competition
- Sirius.AI 2023 Computer Vision Intensive Course, placed 1st in a team-based project competition
- A year-long Data Structures and Algorithms course at Yandex, Russia's largest IT company  
During this course I was able to enhance technical proficiency in competitive problem-solving

## WORK EXPERIENCE

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### Biometriclabs

Backend Developer

(July 2023 - August 2023)

- Created a high-performance codebase to connect the mathematical models written in C with the existing UI and the database of reports from sensors

### Biometriclabs

Embedded Developer

(June 2021 - August 2021)

- Built prototypes of innovative products with the Raspberry Pi, collected human heart rate data and converted it into the required digital format

Granted direct admission to internships in ML at largest russian banks (Sber and Tbank) for winning top corporate ML competitions (interview waived).

## PROJECTS

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### Computer Science and AI

- Machine learning model, that can use publicly available blockchain network data to prevent a transaction with a high risk of money laundering (GNNs and more)
- Amur tiger detection, segmentation and reidentification software for remaining population size estimation
- Unwanted plants dataset collection, detection and segmentation software for farmers

### Economics and Business

- Company reviews reliability evaluation for credit scoring using advanced mathematical modelling techniques using data about 15,000+ companies
- Governmental investment effectiveness evaluation and prediction based on overall economy performance using data about 200,000 companies
- Private investment regularity evaluation and prediction for brokerage recommender systems using data about 5000 clients