Aleksandr Gordeev

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Education

Yaşar University — Izmir, Türkiye
B.S. in Computer Engineering, 100% Scholarship — *2023 – Expected 2027*

Universidad Complutense de Madrid — Madrid, Spain
Erasmus+ Exchange, Grant Recipient — *2024 – 2025*

Experience

Robotics and Autonomous Systems Intern — Jun 2026 – Jul 2026
ISCAR Research Group, Universidad Complutense de Madrid — *Madrid, Spain*

- Extended a MATLAB trajectory-planning framework from a single vehicle to coordinated multi-ASV missions for cyanobacterial-bloom monitoring.
- Implemented NSGA-II/III with collision-avoidance, route-overlap and workload objectives; a new longest-route objective cut fleet idle time by 62–66% and raised the best density score by up to 44%.
- Ran parallel simulation campaigns and compared Pareto fronts with hypervolume and non-parametric tests.

Robotics Instructor, Mentor and Competition Judge — 2018 – 2022
Palace of Children's Creativity; Regional Charity Organisation "Zabota" — *Nizhny Novgorod, Russia*

- Taught LEGO EV3 and Arduino to junior and underprivileged students and judged youth robotics competitions.

Projects

Autonomous Tram Digital Twin — Aug 2026 – Present
C++, WebAssembly, Simulation — Live demo · GitHub

- Built a deterministic C++/WebAssembly simulator of automated tram networks (Izmir, Nizhny Novgorod) with vehicle dynamics, signalling, interlocking, passenger demand and traction energy.
- Zero safety violations under ∼9,900 injected detector and switch faults across 172 simulated hours.
- Wayside flywheels cut simulated grid energy by 22–24%; headway control recovers delays within about an hour.
- Submitted as a TÜBİTAK 2209-A research proposal (multi-objective optimization, hardware-in-the-loop).

Privet: Learning App + Robot Companions — Oct 2026 – Present
ESP32, C++, Bluetooth LE, iOS — Live site · GitHub

- Designed an acknowledged iOS–ESP32 BLE protocol that survives phone lock and reconnects automatically.
- Wrote firmware for two ESP32 companions: 11 reactions using OLED faces, servos, sound and motion sensing.

Autonomous Tram System — 2020 – 2022
C++, Arduino, PCB Design — GitHub

- Built an autonomous model tram: winner of the WRO 2021 Russian National Final and international finalist.
- Designed custom PCBs and real-time firmware for motion control, obstacle detection, fail-safes and V2I links.

Red Monopoly — Jan 2025 – May 2025
Java, OOP, Networking, GUI, Scrum — GitHub

- Built a networked desktop game in a Scrum team with multiplayer for up to eight players and adaptive AI.

Selected Achievements

International Finalist – World Robot Olympiad (WRO) 2021
First Place – All-Russian Festival of Research Design Works "Vector" (2022)
Winner (Ecological Urban Infrastructure) – Russian Robot Olympiad 2021
Second Place – Baltic Science and Engineering Competition (2022)
Third Place – XIV All-Russian Youth Competition ROST-ISEF (2022)

Skills

Programming: C/C++, MATLAB, Java, SQL, Python, MIPS and RISC-V Assembly
Robotics: Autonomous Systems, Trajectory Planning, Multi-Robot Systems, Simulation, NSGA-II/III Optimization
Engineering: Arduino, ESP32, Embedded Systems, Bluetooth LE, PCB Design, Digital Design, Electronics
CS Concepts: OOP, Data Structures, Algorithms, Computer Networks, Scrum
Tools: Git, GitHub, LaTeX, Xcode, 3D Printing
Languages: Russian (Native), English (C1), Turkish (B1), Spanish (A2)