Artavazd Khachatryan

Transit Systems, Optimization & Planning · Engineering Student
Yerevan, Armenia · khachatryan.arto@gmail.com
artkhachatryan.me · linkedin.com/in/artok06 · github.com/artok06

SUMMARY

Five years contributing to public-transit planning, scheduling, and fleet-electrification work as a volunteer assistant to the chief engineer at Yerevan Electric Transit, where I participated in the design of trolleybus route extensions. I build computational and machine-learning tools for transit decisions, including "Yeraz," a route-electrification optimizer for data-scarce cities.

EDUCATION

B.S. Engineering Sciences — American University of Armenia (AUA) *2024 – 2028 (expected)*

- GPA 3.96 / 4.00, prior to transfer.
- Coursework: Calculus I–III, Linear Algebra, Ordinary Differential Equations, Probability & Statistics, University Physics (Mechanics, E&M), CAD, Statics, Circuits, Fluid Mechanics.

PRESENTATIONS

Khachatryan, A. (2026). *Bridging the Digital Divide in Transit Electrification: A Multi-Objective Optimization Framework for Data-Scarce Cities (Yeraz).* Poster, INFORMS Transportation Science & Logistics (TSL) Conference, Cambridge, MA, July 2026.

PROJECTS

"Yeraz" Electric Transit Optimizer *2025 – Present*

- A multi-objective mixed-integer program (MIP) that recommends which bus routes to electrify under budget, fleet, single-charge range, and depot-charging constraints; solved to global optimality with PuLP / CBC.
- Dual-workflow data pipeline for data-scarce cities: derives route geometry and gradient from open services (OSRM, Open-Elevation) where GTFS feeds are unavailable.
- Optimizes a weighted objective over emissions, ridership, and a first-version spatial-coverage / equity proxy.
- Finalist, AI x City Climate Action Hackathon 2025; presented at Yerevan Sustainable Energy Days 2026 (Certificate of Professional Consultation, Yerevan Municipality).
- Demo: youtu.be/8MNel808Kxc · Code: github.com/artok06 (open-source).

Ughi — Headway-Prediction ML Model *2025*

- A machine-learning model that predicts segment traversal times from features such as vehicle type, time of day, season, and weather, then derives per-vehicle headways to help prevent bunching.

EXPERIENCE

Subway Vehicle Procurement Intern — Berliner Verkehrsbetriebe (BVG), Berlin *Jun – Jul 2026*

- Built a Power BI dashboard (DAX, Deneb) to visualize and analyze subway rolling-stock metrics — fleet mileage, energy consumption, and door utilization.
- Identified and reported critical flaws in the underlying raw data, improving the reliability of the reported metrics.
- Automated recurring data and reporting workflows using Excel Power Query.
- Joined live subway test runs to study vehicle structures and functionality first-hand.

Volunteer Analyst & Assistant to the Chief Engineer — Yerevan Electric Transit (YET) *2021 – Present · 5 yrs*

- Participated in the design of trolleybus route extensions — extending route S4 to the Central Railway Station for metro interchange, and route S5 connecting the Davtashen and Ajapnyak districts to the metro — and carried out route analysis and calculations for S1–S3.
- Replaced manual timetable measurement with GIS-based distance calculations, and supported live dispatch operations to reduce vehicle bunching.
- Contributed comparative fleet-modernization analysis that informed procurement discussions preceding a ~50% fleet renewal.

Volunteer — Yerevan Metro after Karen Demirchyan *2021 – Present*

- Proposed a security concept for the metro's above-ground sections integrating Distributed Acoustic Sensing (DAS) and edge-AI; presented and discussed with Yerevan Metro.
- Presented comparative proposals for rolling-stock renewal, drawing on international examples, to inform early technical-specification discussions.
- Submitted various suggestions for enhancing the Yerevan metro, including train scheduling, presented for the metro's consideration.

Participant — Yerevan Sustainable Urban Transport & Electric Mobility Program *2026*

- Took part in the program's second public workshop and its supporting work, including a parking study and operational inputs on the transit network (depot locations, fleet size).

SKILLS

Optimization & OR: mixed-integer & linear programming, constraint programming (PuLP, CBC)

Programming & data: Python (pandas, geopandas, scikit-learn), C, Git; machine learning for demand modeling

Geospatial & BI: GIS / QGIS, OSRM, OpenStreetMap / Overpass, Power BI

Transit domain: network design, scheduling, fleet management, demand modeling

HONORS & AWARDS

- Certificate of Professional Consultation, Yerevan Municipality (2026) — energy-efficiency engineering, Yerevan Sustainable Energy Days.
- Finalist, AI x City Climate Action Hackathon (2025).

LANGUAGES

Armenian (native) · English (full professional) · Russian (full professional) · German (full professional — TestDaF TDN 5, all sections)