Shahbozbek Abdunabiev

PhD in Electrical, Electronic and Communications Engineering
DSc in Technical Sciences
Curriculum Development | Engineering Education | Industry–Academia Links

1 Personal Information

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2 Profile

Engineering educator and researcher with ten years in technical education, currently Acting Head of the Automatic Control and Computer Engineering Department at Turin Polytechnic University in Tashkent. Experience in curriculum development (Erasmus+ ECCUM, Mathematical Engineering), course and laboratory design, and the assessment of secondary education institutions (lyceums, grades 10–12). Has combined university teaching with industry software development and worked in technology transfer and spin-off pre-incubation, bringing a practical, employer-oriented view of how technical skills are taught and applied.

3 Education, Curriculum & Assessment Experience

2026 - Present
Academic Leadership | Acting Head of Department, TTPU
Leading the academic and administrative work of the Automatic Control and Computer Engineering Department, including its study programmes and teaching activities.

2024 - Present
Industry–Academia Transfer | Politecnico di Torino
Technology transfer and pre-incubation support for academic spin-offs, pitch development and international grant writing; co-inventor of a granted Italian national patent.

2019 - 2020
Structured Training Programme | MSCA ITN H2020-COMPLETE
Fellow in a Marie Skłodowska-Curie Innovative Training Network, a structured international doctoral training programme.

2018 - 2019
Teaching Combined with Industry Practice
Worked as a back-end developer at Datasite Technologies in parallel with lecturing at TTPU, connecting classroom and laboratory teaching with current workplace practice in software engineering.

2017 - 2018
Curriculum Development | Erasmus+ ECCUM Project
Participated in the international Erasmus+ ECCUM project on developing the curriculum for Mathematical Engineering.

2016 - 2019
Institutional Assessment | Academic Lyceums (Grades 10–12)
Participated in the assessment of lyceums (upper-secondary schools, grades 10–12) while working at Turin Polytechnic University in Tashkent.

2016 - 2019
Course & Laboratory Design | TTPU and Andijan Machine-Building Institute
Prepared course curricula, designed assignments and developed teaching materials for Algorithms & Programming (C), Computer Architecture (x86 Assembly) and Object-Oriented Programming (Java). Organised and led hands-on laboratory sessions.

4 Work Experience

2026 - Present
Acting Head of Department | Turin Polytechnic University in Tashkent
Automatic Control and Computer Engineering Department. Leading the department's academic and administrative activities.

2024 - Present
Postdoctoral Researcher | DISAT, Politecnico di Torino, Turin, Italy
Responsible for designing atmospheric measurement experiments, overseeing field observations, and executing rigorous instrument calibrations compliant with national and international standards. Proven track record in technology transfer and pre-incubation management for academic spin-offs, complemented by expertise in authoring competitive international research grant proposals and delivering pitch presentations for innovative technologies.

2019 - 2024
Research Fellow | DISAT, Politecnico di Torino, Turin, Italy
Conducted research in atmospheric fluid dynamics using High-Performance Computing (HPC) for Direct Numerical Simulation (DNS), alongside experimental field studies. Managed the deployment, data collection, and remote monitoring systems of biodegradable radiosondes, integrating empirical measurements with high-fidelity computational models.

2016 - 2019
Assistant Lecturer | Turin Polytechnic University in Tashkent
Taught core computer science courses, including Algorithms & Programming (C), Computer Architecture (x86 Assembly), and Object-Oriented Programming (Java). Responsible for preparing course curricula, designing assignments, and managing hands-on laboratory sessions. Participated in the Erasmus+ ECCUM curriculum development project and in the assessment of lyceums.

2018 - 2019
Back-end Developer | Datasite Technologies, Tashkent
Developed software solutions using Java, Spring Boot, and PostgreSQL. Designed automated reporting systems for logistics and delivery analytics.

2017 - 2018
Assistant Lecturer | Andijan Machine-Building Institute
Taught Algorithms and Programming (C) and Computer Architecture. Developed educational materials and led laboratory sessions.

2016 - 2017
Educational Portal Administrator | Turin Polytechnic University in Tashkent
System administration. Managed the educational portal and provided technical support for users (professors and students).

5 Projects

ECCUM, Erasmus+ (2017–2018), Curriculum Development
International project on developing the curriculum for Mathematical Engineering.

HOUSEFLIES (2024–2025), Technical Developments and Process Management
Designing a mini-radiosonde cluster network for atmospheric (e.g., cloud) monitoring, coordinating procurement, laboratory testing, and field trials. Managing project technical infrastructure, collecting multi-sensor data, and organizing data processing pipelines with international partners (ItaliaMeteo, ARPA-Piemonte, UK Met-Office, UK NCAS, University of Innsbruck).

MIGRE (2022–2023), Technical Developments and Process Management
Development of an ultralight (under 20g) eco-friendly (biodegradable) mini-radiosonde system for monitoring atmospheric clouds and boundary layers. Device design, sensor integration (pressure, temperature, humidity), and long-range data transmission management (via LoRa protocol). Created software infrastructure for analyzing acquired Lagrangian data.

H2020-COMPLETE (2019–2020), MSCA Research Fellow
Research on cloud microphysics and turbulence within the Horizon 2020 international Marie Skłodowska-Curie Innovative Training Network for PhD candidates.

WING DMS (2018–2019) - Reporting Module Software System

Data-reports project for automated data analysis and reporting for WING Delivery (UAE).

6 Education

2024 | PhD: Electrical, Electronic and Communications Engineering
Politecnico di Torino, Turin, Italy (Graduated with Honors / Cum Laude)

2016 | Master of Science: Computer Engineering
Politecnico di Torino, Turin, Italy

2013 | Bachelor of Science: Computer Engineering
Turin Polytechnic University in Tashkent, Tashkent

7 Languages and Professional Skills

- Languages: Uzbek - Native; English - C1 (Fluent); Russian - Good; Italian - Good.
- Education: Curriculum and course development, laboratory and practice-based teaching, assessment of educational institutions, academic leadership.
- Administrative: Project coordination, scientific reporting and technical writing, international grant proposals, team collaboration.
- Technical: Programming (C, Python, Java), Microcontroller programming, Data analysis & statistics (MATLAB, Python), Parallel programming (HPC, MPI, OpenMP, CUDA).

8 Scientific Publications and Patent

2024 | *"Validation and traceability of miniaturized multi-parameter cluster radiosondes used for atmospheric observations."* Sh. Abdunabiev*, Ch. Musacchio, A. Merlone, M. Paredes, E. Pasero, D. Tordella, Measurement 224, 113879 (2024) https://doi.org/10.1016/j.measurement.2023.113879

2023 | *"LoRa based remote expendable radiosonde network for environmental observations."* Sh. Abdunabiev, E. Pasero, D. Tordella, IEEE Int. Workshop on Metrology for Industry 4.0 & IoT, pp. 78–83 (2023) https://doi.org/10.1109/MetroInd4.0IoT57462.2023.10180026

2022 | *"Diffusion of turbulence following both stable and unstable step stratification perturbations."* L. Gallana, Sh. Abdunabiev, M. Golshan, D. Tordella, Physics of Fluids 34, 065122 (2022) https://doi.org/10.1063/5.0090042

2022 | *"Microphysical timescales and local supersaturation balance at a warm cloud top boundary."* L. Fossà, Sh. Abdunabiev, M. Golshan, D. Tordella, Physics of Fluids 34, 067103 (2022) https://doi.org/10.1063/5.0090664

2022 | Patent (granted, Italian national): *"Atmospheric radiosonde and method for its operation."* D. Tordella, E. Pasero, M. Paredes, Sh. Abdunabiev, M. Allegretti, V. Randazzo

2021 | *"Innovative mini ultralight radiosondes to track Lagrangian turbulence fluctuations within warm clouds: electronic design."* M. Paredes, Sh. Abdunabiev, M. Allegretti, A. Merlone, Ch. Musacchio, E. Pasero, D. Tordella, F. Canavero, Sensors 21(4), 1351 (2021) https://doi.org/10.3390/s21041351

2021 | *"Intermittency acceleration of water droplet population dynamics inside the interfacial layer between cloudy and clear air environments."* M. Golshan, M. Tomatis, Sh. Abdunabiev, F. Fraternale, M. Vanni, D. Tordella, International Journal of Multiphase Flow 140, 103669 (2021) https://doi.org/10.1016/j.ijmultiphaseflow.2021.103669

Conference contributions include EGU General Assembly 2025 (EGU25-3546, EGU25-6918) and the Fifth TEAMx Workshop 2026. Full list: Google Scholar