Dr. Rehan Mahmood

Satellite Communications & NTN Systems Engineer | Space–Telecom Convergence | Ground/Space Segment Leadership

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Simulator, portfolio, and media

20+ Years
Satellite communications and systems engineering

PhD + MSc
Satellite engineering and satellite communications

NTN Focus
Current R&D on NGN/NTN and PPDR use cases

PI / CTO
Mission, lab, and technical program leadership

Executive Profile

Senior satellite communications and systems engineering professional with more than 20 years of experience spanning satellite communications, small-satellite missions, embedded systems, link budgeting, frequency coordination, laboratory development, and technical program leadership. Holds a PhD in Satellite Engineering and an MSc in Satellite Communications, with current applied R&D focused on NGN/NTN and PPDR use cases, including digital-twin-driven scenario evaluation and the impact of Doppler and related channel effects in integrated terrestrial and non-terrestrial networks. Combines mission credibility, academic depth, and execution-oriented leadership suitable for industry roles in satellite operators, telecom-space convergence programs, ground/space segment engineering, advanced systems architecture, technical advisory, and next-generation connectivity initiatives.

Best-Fit Industry Positioning

- Satellite communications systems engineering
- Ground segment, telemetry, TT&C, and systems integration
- Digital-twin and scenario-based network evaluation
- Technical leadership across labs, missions, and proposals
- NTN / telecom-space convergence
- Link budgeting, frequency coordination, and RF/system analysis
- Doppler / channel effects in integrated NTN research
- Executive training and capability building for satellite programs

Selected Relevance for NTN and Satcom Roles

- Leading development of an NGN/NTN and PPDR digital-twin simulator for scenario-based evaluation of resilient communications across terrestrial and non-terrestrial network environments, including operator-facing KPI visualization and decision-support workflows.
- Currently engaged in research on NTN-relevant performance factors including Doppler and related propagation / system effects in integrated satellite-terrestrial communication scenarios.
- Provides commercial satellite-engineering support as Chief Technology Officer of Space Systems Pvt. Ltd., including feasibility studies, link budgets, frequency coordination, proposal support, and systems engineering inputs.
- Brings mission and program credibility through multiple satellite initiatives including ICUBE-1, SSS-2A, ICUBE-N, ICUBE-Q, and ICUBE-CSAT.
- Combines communications engineering depth with program-building experience, enabling contribution in both architecture-facing and capability-development-facing industry roles.

Professional Experience

Director and Principal Investigator — **Mar 2020 – Present**
Small Satellite Technology & Research Lab, Institute of Space Technology — *Islamabad, Pakistan*

- Lead strategy, technical execution, infrastructure development, staffing, procurement, and multidisciplinary program delivery for satellite and space-technology initiatives.
- Direct mission-aligned R&D, engineering education, and applied capability-building activities across CubeSat, communications, and laboratory-development programs.
- Leading an NGN/NTN and PPDR digital-twin simulator initiative addressing scenario engineering, KPI analytics, and integrated terrestrial/non-terrestrial communications evaluation.

Chief Technology Officer **2015 – Present**
Space Systems Pvt. Ltd. *Pakistan*

- Lead technical proposals, feasibility studies, satellite communications analyses, link budgets, frequency coordination, and systems-engineering support for space-related projects.
- Support commercially oriented delivery in small-satellite engineering, satcom advisory, and technical bid / concept development.

Associate Professor **Dec 2021 – Present**
Institute of Space Technology *Islamabad, Pakistan*

- Teach satellite communications, satellite engineering, and related communication-engineering subjects while supervising student projects and postgraduate research.
- Translate mission and systems experience into workforce development, technical mentoring, and applied research capability.

Assistant Professor / Lecturer / Assistant Manager **Sep 2002 – Nov 2021**
Institute of Space Technology *Islamabad, Pakistan*

- Developed deep expertise across teaching, systems engineering support, laboratory establishment, and institutional capability development in communications and space engineering.

Visiting Consultant **Sep 2024 – Jan 2025**
Sultan Qaboos University *Muscat, Oman*

- Supported engineering teaching and CubeSat laboratory development, providing relevant Gulf-region exposure for capability-building and academic-industry collaboration.

Mission and Program Portfolio

ICUBE-1	Pakistan's first university CubeSat initiative; contributed to feasibility, technical development support, and institutional satellite capability building.
SSS-2A	APSCO Student Small Satellite-2A, developed in collaboration with Shanghai Jiao Tong University; served as technical lead from the Pakistan side and contributed to systems work including link budgeting and frequency coordination.
ICUBE-N	National CubeSat initiative; contributed to project leadership and small-satellite capability development.
ICUBE-Q	Lunar CubeSat mission launched via Chang'e-6 and operated around the Moon for approximately three months; served as one of three Principal Investigators.
ICUBE-CSAT	Classroom Satellite initiative for hands-on engineering training, telemetry/system exposure, and student mission capability development.

Education

PhD, Satellite Engineering **2014 – 2018**
Beihang University *China*

MSc, Satellite Communications **2005 – 2006**
University of Surrey *United Kingdom*

Awarded the Cable & Wireless prize for best overall performance in the school.

BSc, Electrical Engineering **1998 – 2002**
University of Engineering and Technology, Taxila *Pakistan*

Additional Technical Value

Experienced in executive workshops, technical training, curriculum design, engineering laboratory development, and collaboration with international partners including APSCO-linked programs and university collaborators. Comfortable positioning technical work for both R&D and capability-development settings, especially where satellite systems, telecommunications, and workforce development intersect.