

TABLE I: Table of Acronyms

Acronym	Full Form
3GPP	Third Generation Partnership Project
A2C	Advantage Actor-Critic
ACO	Ant Colony Optimization
AC	Aerial Controller
ADS-B	Automatic Dependent Surveillance-Broadcast
AGIFL	Air-Ground Integrated Federated Learning
AGIOFL-PE	Air-Ground Integrated Online Federated Learning with Predictive Enhancement
AI	Artificial Intelligence
AoI	Age of Information
AR	Augmented Reality
ASR	Average Secrecy Rate
BCD	Block Coordinate Descent
BC-UCB	Budgeted Upper Confidence Bound
BFA3C	Blockchain-Enabled Federated Asynchronous Actor-Critic
BMV2	Behavioral Model Version 2
CAHM	Channel-Aware Handover Management
CB-FBC	Combinatorial Bandit for Fair Bandwidth Coverage
CDMADDPG	Centralized and Distributed Multi-Agent Deep Deterministic Policy Gradient
CDN	Content Delivery Network
CNASA	Civil Aircraft-Assisted Space-Air-Ground
CNPC	Control and Non-Payload Communications
CNP	Common Network Protocol
Com ² Net	Communication and Computation Integrated Network
CPODQN	Cache-Pool-Optimized Deep Q-Network
CRO	Channel Reservation Order
CSC	Coded Storage-and-Computation
CSI	Channel State Information
D3QN	Dueling Double Deep Q-Network
DCI	Dynamic Channel Index
DDPG	Deep Deterministic Policy Gradient
DEFEND	Distributed Efficient Federated Learning
DGHD	Diffusion-Based Generative Handover Decision
DHSTC	Dynamic Handover Software-Defined Transmission Control
DL	Deep Learning
DMAPPO	Diffusion Multi-Agent Proximal Policy Optimization
DQN	Deep Q-Network
DRCAM	Deep Reinforcement Learning-Based Resource Allocation and Computation Offloading for Microservices
DRL	Deep Reinforcement Learning
DRLO	Dual Network Deep Reinforcement Learning Offloading
DSTMR	Deterministic Spatio-Temporal Multipath Routing
DVB-RCS2	Digital Video Broadcasting - Return Channel via Satellite 2
EAFLM	Efficient Asynchronous Federated Learning Mechanism
EDNN	Ensembling Deep Neural Networks
EE	Energy Efficiency
EI	Edge Intelligence
ELM	Extreme Learning Machine
ESMD-Flow	Endogenous Security Multi-Dimensional Flow
EV	Electric Vehicle
FLOPs	Floating Point Operations
FL	Federated Learning
FRL	Federated Reinforcement Learning
FSO	Free Space Optical
GA	Genetic Algorithm
GC	Ground Controller
GAN	Generative Adversarial Network

TABLE I: Table of Acronyms (continued)

Acronym	Full Form
GBH	Graph-Based Handover
GCN	Graph Convolutional Network
GD-EA-VNE	Graph-Driven Energy-Aware Virtual Network Embedding
GDPR	General Data Protection Regulation
GEO	Geostationary Earth Orbit
GIO	Graph Theory-Based Iterative Optimization
GNN	Graph Neural Network
GNSS	Global Navigation Satellite System
GPS	Global Positioning System
GRIST	Graph-Based Resource Allocation for Integrated Space and Terrestrial
GSM-R	Global System for Mobile Communications - Railway
H-AC	Hybrid Actor-Critic
HALE	High-Altitude Long Endurance
HAP	High-Altitude Platform
HAPN	High Altitude Platform Networking
HHDRl	Hierarchical Hybrid Deep Reinforcement Learning
HST	High-Speed Train
HTWO	Hybrid Trajectory and Wireless Optimization
HVO	Horizontal and Vertical Optimization
HZAO	Hybrid Zenith Angle Optimization
IMAS	Identity-Based Mutual Authentication Scheme
IoT	Internet of Things
IoV	Internet of Vehicles
ISAC	Integrated Sensing and Communication
JULRA	Joint UAV Location and Resource Allocation
LEO	Low Earth Orbit
LinUCB	Linear Upper Confidence Bound
LLM	Large Language Model
LMAPPO	Lyapunov-Based Multi-Agent Proximal Policy Optimization
LoS	Line of Sight
LPsO	Learning Particle Swarm Optimization
LSTM	Long Short-Term Memory
LTE-A	Long Term Evolution Advanced
LTE-R	Long Term Evolution for Railways
MAB	Multi-Armed Bandit
MAC	Medium Access Control
MACN	Multi-tier Aerial Communication Network
MADM	Multi-Attribute Decision Making
MAGSS	Medium Altitude Global Satellite System
MAIN	Metaverse-Inspired Aerial Integrated Network
MAMDP	Multi-Agent Markov Decision Process
MAPPO	Multi-Agent Proximal Policy Optimization
MARL	Multi-Agent Reinforcement Learning
MCTS	Multi-Agent Cooperation Transmission Strategy
MEC	Mobile Edge Computing
MEO	Medium Earth Orbit
ME-SAGIN	Metaverse-Enabled Space-Air-Ground Integrated Network
MESL	Multi-Agent Stochastic Learning
MILP	Mixed Integer Linear Programming
MIMO	Multiple Input Multiple Output
MINLP	Mixed Integer Nonlinear Programming
ML	Machine Learning
MOEA/D	Multi-Objective Evolutionary Algorithm Based on Decomposition
MOEA	Multi-Objective Evolutionary Algorithm
MPC	Model Predictive Control

TABLE I: Table of Acronyms (continued)

Acronym	Full Form
MTCD	Massive Machine Type Communication Device
N/A	Not Applicable
NFV	Network Function Virtualization
NOMA	Non-Orthogonal Multiple Access
NTN	Non-Terrestrial Network
OAI	OpenAirInterface
OBL	Olive Branch Learning
O-RAN	Open Radio Access Network
PER	Packet Error Rate
PMADDPG	Prioritized Multi-Agent Deep Deterministic Policy Gradient
PPO	Proximal Policy Optimization
PSO	Particle Swarm Optimization
PSP	Particle Swarm Optimization with Simulated Annealing
PVM	Projection-Valued Measure
QGA	Quantum Genetic Algorithm
Q-MARL	Quantum Multi-Agent Reinforcement Learning
QoE	Quality of Experience
QoS	Quality of Service
RADROO	Risk-Aware Distributionally Robust Optimization
RAN	Radio Access Network
RASAR	Reliable Autonomous Service Architecture
RF	Radio Frequency
RIS	Reconfigurable Intelligent Surface
RL	Reinforcement Learning
ROS	Robot Operating System
RSMA	Rate Splitting Multiple Access
SAGIN	Space-Air-Ground Integrated Network
SC	Space Controller
SCA	Successive Convex Approximation
SDN	Software Defined Networking
SE	Spectral Efficiency
SFC	Service Function Chaining
SINR	Signal-to-Interference-plus-Noise Ratio
SL	Supervised Learning
SNR	Signal-to-Noise Ratio
STFN	Satellite-Terrestrial Fog Network
STIN	Space-Terrestrial Integrated Network
STK	Systems Tool Kit
STN	Satellite-Terrestrial Network
SVM	Support Vector Machine
TCP	Transmission Control Protocol
TD3	Twin Delayed Deep Deterministic Policy Gradient
TD3PG	Twin Delayed Deep Deterministic Policy Gradient with Prioritization
TLE	Two-Line Element
TSN	Time Sensitive Networking
UAV	Unmanned Aerial Vehicle
UL	Unsupervised Learning
URLLC	Ultra-Reliable Low Latency Communication
VDI	Virtual Deadline Index
VHO	Vertical Handover
VNR	Virtual Network Request
VR	Virtual Reality
VWO	Whale Optimization
WPT	Wireless Power Transfer

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Acronym	Full Form
XAI	Explainable Artificial Intelligence