Tu4A-1 **15:00-15:15**

Sequential Loss Estimation Using GNPy and Ensemble Kalman Filter

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We propose a method integrating the Ensemble Kalman Filter and GNPy to estimate model parameters for optical networks and accurately detect loss changes at fiber span input/output from received SNR and span losses in experiments.

Tu4A-2 **15:15-15:30**

Learning to Adapt: Evolving ML for Evolving Network Infrastructures

Emilio Paolini[1], Andrea Sgambelluri[1], Luca Valcarenghi[1], Piero Castoldi[1], Filippo Ponzini[2], Teresa Pepe[2], Giulio Bottari[2], Paola Iovanna[2]
[1]Scuola Superiore Sant'Anna, [2]Ericsson

We propose a continual-learning AI framework leveraging high-frequency telemetry for proactive optical-network fault management, enabling adaptation to evolving configurations while preserving prior knowledge through continual learning.

Tu4A-3 **Invited** **15:30-16:00**

AI-Driven Network Operations for 6G: LLM Based Automated Provisioning with Network Digital Twin Verification

Kwang-koog Lee, Eunjung Lee, Eun-Do Kim, Jung-hyo Lee, Hee-Heon Jung, Jin-Ha Lee, Jemin Chung
KT Corp.

This paper proposes a novel AI-driven operational framework designed for the automated configuration of wired IP routers within the 6G ecosystem. Our approach integrates a domainspecific Large Language Model (LLM) for intent-based script generation with a high-fidelity Network Digital Twin for pre-deployment validation. We introduce "Net Genie," an automated agent that orchestrates this workflow to ensure both operational agility and network reliability. Experimental results demonstrate that the proposed framework reduces configuration lead time by 80%.

Tu4A-4 **Invited** **16:00-16:30**

Bridging the Trust Gap in AI-Driven Optical Networks with Structured Explainability

Kiarash Rezaei[1], Omran Ayoub[2], Carlos Natalino[1], Paolo Monti[1]
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AI/ML models can automate optical-network decisions, yet operators distrust their opaque outputs. Existing explainability methods help but remain hard to interpret and not directly actionable. We propose the Capture–Characterize– Communicate (3C) framework, which formalizes explainability as an end-to-end pipeline, i.e., from capturing model behavior, through local explanations, to human-readable decision guidance. The framework is demonstrated on two optical-network problems: explainable RL for RMSA and LLM-augmented explainability for QoT estimation, where it produces auditable, operator-facing explanations.