

Demo: A Drift-Handling Automation in AI/ML Framework Integrated O-RAN

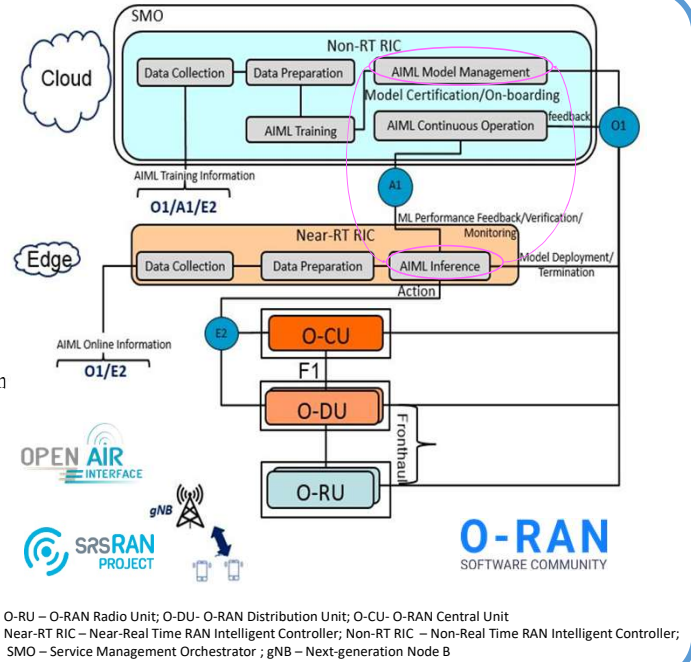
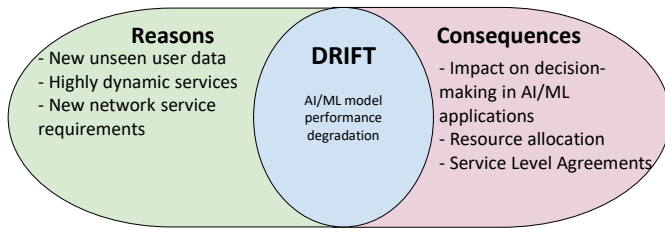
Venkatesh Gani*, Dhruv*, Yaswanth Kumar L.S.[§], Ashit Subudhi*,
Majid K*, Abhishek Bhattacharyya*, Venkateswarlu Gudepu*,
Bheemarjuna Reddy Tamma[§], Koteswararao Kondepudi*
* Indian Institute of Technology Dharwad, India
§ Indian Institute of Technology Hyderabad, India

Abstract :

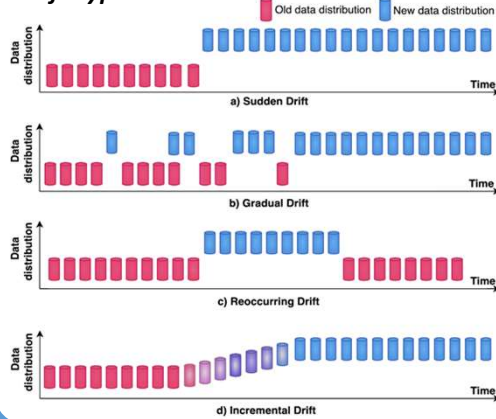
This work demonstrates a real-time *drift detection, analysis, and adaptation* by leveraging an AI/ML framework integrated O-RAN. This is achieved with real time data collection from open interfaces which would be used by intelligent controllers (i.e., Non-RT RIC) for training and inference purposes of AI/ML models. The proposed drift-handling automation monitors network performance metrics to identify model drift with minimal data and computation overheads and then adapts to current network conditions by either retraining the model or replacing it with an available pre-trained model.

Motivation :

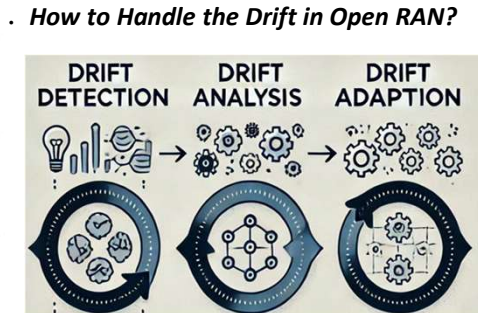
AI/ML-driven RAN Intelligent Controllers (RICs) improve network optimization an automation, enabling real-time resource management and self-healing capabilities



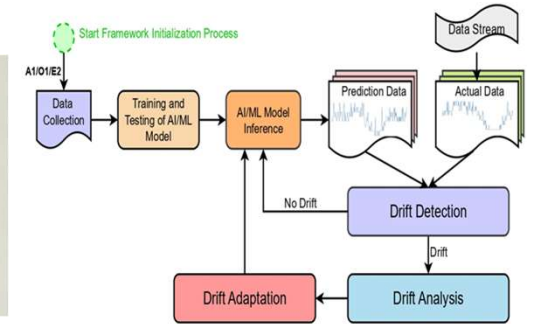
Drift Types



AI/ML Inference Drift Handling



Drift Handling Framework



Experimental Setup



Testbed Setup

- This live demo incorporates an *Open5GS* instance for Core Network.
- srsRAN deployment which includes one instance of *srsCU*, *srsDU*, and *srsUE*.
- *Near-RT RIC* and *Non-RT RIC* from O-RAN Software Community (SC).
- Used *iperf* to mimic real-time traffic.
- The proposed framework performs well by combining real-time drift monitoring with automatic adaptation.
- The considered AI/ML model achieves precision (0.9785), recall (1.0000), and F1-score (0.9891).