

AI/ML for NG-RAN in Rel-18

RAN Rel-18 Workshop

28th June – 2nd July 2021

RWS-210083

AI/ML for NG-RAN

Motivation

- Rel-17 SI aims at enabling RAN intelligence by defining the needed framework for AI/ML in NG-RAN
 - Envisions enabling AI/ML in the NG-RAN in an agnostic way (proprietary solution), without modifying the NG-RAN architecture and interfaces
 - Currently focuses on the use cases of energy saving, load balancing, and mobility enhancements/traffic steering
 - A much larger number of use cases have been proposed by companies
- Expected outcome of the Rel-17 SI
 - A functional framework enabling AI/ML in the NG-RAN
 - Description of standardization impacts for prioritized use cases, with respect to
 - Data needed in the input of an AI function and produced in its output
 - Changes in the node or function in the architecture to provide this input or output information
 - Expected new signalling
- UE impacts are not fully in the scope of the Rel-17 SI
 - Measurements used by the Rel-17 SI are limited to those provided by NG-RAN or existing UE measurements
 - Machine Learning algorithms could also be located in the UE

AI/ML for NG-RAN

Objectives (work item)

Potential objectives for a Rel-18 Work Item

- Specify architecture options for the prioritized use cases (Energy Saving, Load Balancing, Traffic Steering/Mobility enhancements)
- Data Collection for Training and Inference phase
 - Model Training and Inference functions should be able to request information for training or inference of an ML Model from other network entities on a use-case specific basis
 - Mechanisms will be introduced to send ML-related information only to entities that have requested it in order to avoid sending of unnecessary information through the network
 - Possibly new measurements in the NG-RAN related to e.g., predictions will need to be specified for the identified use cases
 - The existing SON/MDT/Trace signaling procedures may serve as the baseline for the data collection, and will be further enhanced when appropriate
- Model Management and Transfer of a trained ML model through the network interfaces

AI/ML for NG-RAN

Objectives (concurrent study item)

Potential objectives for a concurrent Rel-18 Study Item

- Study additional use cases, which were not studied or concluded in the Rel-17 SI
- Investigate use cases involving UE in AI/ML operation
 - Machine Learning algorithms could also be located in the UE
 - Further measurements made in UE may be relevant for use cases identified in the Rel-17 SI

Note: While AI/ML WI focuses on SON/MDT use cases, traditional SON/MDT should continue to evolve in Release 18

- MRO enhancements to take into account beam usage
- Further support for private networks (e.g., RLF reporting for SNPN)
- Topics from Rel-17 WI which may not be completed in time or should continue in Rel-18 (e.g., MRO for enhanced mobility and MRO for DAPS)

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