3GPP TSG RAN Rel-19 workshop
Taipei, Taiwan, June 15 – 16, 2023

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Agenda: 5
Source: NVIDIA

AI and ML for 5G NR Air Interface

NVIDIA

Motivation

- 3GPP Release 18 is conducting a study item that investigates AI/ML for NR air interface, including general framework and three use cases (CSI feedback, beam management, and positioning accuracy enhancements).
  - Evaluation results from companies are showing convincing performance improvements.
  - Specification enhancements are being identified to support AI/ML for NR air interface.
- **It is therefore motivated to establish a follow-up work item on AI/ML for NR air interface in 3GPP Release 19.**

- Though 3GPP Release-18 study on AI/ML for NR air interface is a significant step towards AI/ML-enabled air interface, its scope is limited, and many more issues are yet to be investigated towards AI-native air interface.
- Considering the widely anticipated role of AI/ML in 6G and the 6G standardization will start around 2025, it is critical that we leverage the window of opportunity until then to develop a more comprehensive understanding of AI/ML-enabled air interface, as well as achieving a further globally aligned way forward for AI-native air interface.
- **It is therefore essential to establish a Phase-2 study item on AI/ML for NR air interface in 3GPP Release 19 to study additional topics, which are not included or insufficiently investigated in the Release 18 study.**

Proposal

- **Establish a work item on AI/ML for NR air interface in 3GPP Release 19.**
  - Specify enhancements for AI/ML general framework
  - Specify use case-specific AI/ML enhancements
    - CSI feedback
    - Beam management
    - Positioning

- **Establish a Phase-2 study item on AI/ML for NR air interface in 3GPP Release 19.**
  - Study additional aspects for AI/ML general framework
    - Including AI-native air interface and advanced learning (e.g., online learning, federated learning, and split learning).
  - Study additional use cases
    - Reference signal enhancement
    - Mobility enhancement
    - Radio resource management