**3GPP TSG-SA WG4 Meeting #129-eS4-24xxxx**

**Online, 19 – 23 August 2024**

Title: Draft Reply LS on Feature coding for machines

Response to: LS (S4-241463) on Feature coding for machines [SC 29/WG 4 N 529] from SC 29/WG 4

Release: Release 19

Work Item: FS\_AI4Media (Feasibility Study on Artificial Intelligence (AI) and Machine Learning (ML) for Media)

Source: 3GPP SA4

To: SC 29/WG 4

Cc:

**Contact Person:**

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**Send any reply LS to: 3GPP Liaisons Coordinator,** [**mailto:3GPPLiaison@etsi.org**](mailto:3GPPLiaison@etsi.org)

Attachments: 26.927 v0.9.0

**1. Overall Description:**

3GPP SA4 would like to thank SC 29/WG 4 (MPEG Video) for their liaison on Feature coding for machines. We are currently conducting a study on AI/ML for media aimed at analyzing the service configurations requiring AI/ML model transfers and split inference operations between the network and the user device. Federated learning scenarios are also in our scope. This work in progress is documented into the attached draft TR 26.927. Beyond the architecture and functional analysis, we are also conducting performance evaluations of certain scenarios some of which also include compression and optimization techniques <https://www.3gpp.org/ftp/TSG_SA/WG4_CODEC/TSGS4_128_Jeju/Docs/S4-241177.zip> section §9.5.5. From your liaison, it seems that FCM deals with similar techniques, particularly for feature reduction (fusion, temporal/spatial resampling, truncation…).

* We would be interested in whether the FCM Test Model is applicable to our use cases documented in the attached TR (more specifically split inferencing with multiple split points) and if it can be generalized to other networks and other tasks such as NLP (Natural Language Processing) and (Large Language Models) LLM.
* We would like to better understand which AI/ML model types are used, if they are generic or specific to feature reduction and feature restoration. We understood that feature reduction/restoration need be trained for each model at a target split point.

**2. Actions:**

**To SC 29/WG 4 group.**

**ACTION:** Please take the above information into account and provide feedback on:

* + The optimization techniques of FCM, including their efficiency and impact on the precision/accuracy of the AIML models used.
  + The applicability of the FCM Test Model on the use cases documented in the attached TR 26.927.
  + The generalization of FCM to scenarios other than feature extraction.

**3. Date of Next CT1 Meetings:**

SA4#130 18th-22nd November 2024 Orlando, US 🎡

SA4#131 17th-21st February 2025 Geneva, CH ⛷️