AI/ML MODEL MOBILITY SUPPORT METHOD, SYSTEM, AND DEVICE

TECHNICAL FIELD

[0001] This description relates to a method, system, device, and non-transitory computer-readable medium directed to automated support of user equipment (UE) mobility in telecommunication systems including application of artificial intelligence and machine learning (AI/ML) models.

BACKGROUND

[0002] A telecommunication, e.g., cellular, system can include a large numbers of cells having service coverage provided by multiple vendors. A user equipment (UE), e.g., a cell phone, is typically capable of operating in connected, idle, and inactive modes and is often transported among the various cells and multiple vendors. When operating in a given cell, the UE has access to and from a radio access network (RAN) through a network node and becomes actively connected to the RAN when it switches from the inactive or idle mode into the connected mode. Switching between cells operated by different vendors is generally accomplished through a handover operation.

SUMMARY

[0003] In an aspect, a UE includes a memory having non-transitory instructions stored therein and a processor coupled to the memory, and being configured to execute the instructions, thereby causing the UE to, while operating in a connected mode, receive each of a zone identifier and a UE identifier from a first RAN node of a RAN, wherein the zone identifier corresponds to a zone of the RAN including a plurality of cells and a plurality of RAN nodes including the first RAN node, store each of the zone identifier and the UE identifier in a storage device of the UE, and transmit the zone identifier and the UE identifier to a second RAN node responsive to returning to the connected mode from an inactive mode or an idle mode, or receiving, from the first RAN node or a third RAN node, a radio resource control (RRC) handover command corresponding to a handover to the second RAN node.

[0004] In an aspect, a RAN node includes a memory having non-transitory instructions stored therein and a processor coupled to the memory, and being configured to execute the instructions, thereby causing the RAN node to receive a transmission from a UE as part of establishing a connected mode session including the RAN node serving the UE, in response to the transmission including a first zone identifier and a UE identifier, compare the first zone identifier to a second zone identifier of a zone of a RAN including a plurality of cells and a plurality of RAN nodes including the RAN node. In response to a match between the first and second zone identifiers, the RAN node retrieves, from a storage device, an existing AI/ML-based model

associated with the UE identifier based on a previous session including one of the plurality of RAN nodes serving the UE, or in response to a mismatch between the first and second zone identifiers or the transmission lacking the first zone identifier, generates a new AI/ML-based model. The RAN node transmits the corresponding existing or new AI/ML-based model, the UE identifier, and the second zone identifier to the UE.

[0005] In an aspect, a method of operating a RAN includes transmitting a UE identifier and a zone identifier from a first node of the RAN to a UE, wherein the zone identifier corresponds to a first zone of the RAN including a plurality of cells and a plurality of nodes including the first node, storing each of the UE identifier and the zone identifier in a storage device of the UE, transmitting the UE identifier and the zone identifier from the UE to a second node of the RAN, sending an AI/ML-based model and policy parameters from the second node to the UE, wherein the AI/ML-based model and policy parameters are based on the UE identifier and the zone identifier, and applying the AI/ML-based model and policy parameters to an operation of the UE.

BRIEF DESCRIPTION OF DRAWINGS

[0006] Aspects of the present disclosure are best understood from the following detailed description when read with the accompanying figures. In accordance with the standard practice in the industry, various features are not drawn to scale. In fact, the dimensions of the various features are arbitrarily increased or reduced for clarity of discussion.

[0007] FIG. 1 is a diagram of a communication system, in accordance with some embodiments.

[0008] FIG. 2 is a flowchart of an AI/ML model mobility support method, in accordance with some embodiments.

[0009] FIG. 3 is a flowchart of an AI/ML model mobility support method, in accordance with some embodiments.

[0010] FIG. 4 a flowchart of an AI/ML model mobility support method, in accordance with some embodiments.

[0011] FIG. 5 is a diagram of a processor-based device, in accordance with some embodiments.

DETAILED DESCRIPTION

[0012] The following disclosure provides many different embodiments, or examples, for implementing different features of the provided subject matter. Specific examples of components and arrangements are described below to simplify the present disclosure. These are, of course, merely examples and are not intended to be limiting. For example, the formation or position of a first feature over or on a second feature in the description that follows include embodiments in which the first and second features are formed or positioned in direct contact and include embodiments in which additional features are formed or positioned between the first and second