

### **311. MODIFIED ACTOR - CRITIC ALGORITHM FOR ENERGY CONSERVATION IN RADIO ACCESS NETWORKS**

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Energy conservation in Radio Access Networks (RAN) is necessary because of the need to regulate the user traffic which is random and unpredictable. Generally energy conservation is carried by switching ON and bringing Base Station to sleep mode randomly depending on the load. A fundamental algorithm which takes into account the prediction of traffic for regulation is Actor Critic (AC) algorithm which used prediction techniques not sufficient in judging the traffic loads properly. This project proposes an improvement on the AC algorithm by introducing Transfer Actor Critic Algorithm which makes use of Markov Decision Process(MDP) and Reinforcement learning techniques for improved prediction and better regulation of traffic. The improved energy conservation , minimum signal losses and improved delay performance are shown using simulations using NS2 simulator.

Keywords—Radio access networks, base stations, sleeping mode, green communications, energy saving, reinforcement learning, transfer learning, actor-critic algorithm

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