Multi Objective Resource Scheduling using LTE-A Simulator

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Abstract:

The new demands for high-bit-rate applications in radio access environments and the limited capacity of frequency bands have motivated 3rd Generation Partnership Project (3GPP) to propose Orthogonal Frequency Division Multiple Access (OFDMA) technique for Long Term Evolution (LTE) systems. Together with these achievements, the use of the intelligent packet scheduling process is absolutely necessary in order to make the radio resources usage more efficient. The packet scheduling procedure works with dispatching rules which are various with different behaviors. In the literature, the scheduling disciplines are applied for the entire transmission sessions and the scheduler performance strongly depends on the exploited discipline. Our method provides a straightforward schedule within the transmission time interval (TTI) subframe. Hence, a mixture of disciplines can be used for each TTI instead of the single one adopted across the whole transmission. One of the main objectives is to maximize the system throughput assuring in the same time the best user fairness. In order to meet this target, each rule must be called on the best matching conditions. The policy adoption and refinement are the best way to optimize the use of mixture of rules. The Q learning algorithm is proposed for the policy adoption in order to transform the scheduling experiences into a permanent nature, facilitating the decision-making on which rule (rules) will be used for each TTI. Based on above algorithm, two scheduling policies are proposed. The simulation results indicate that the capacity of these methods outperforms the existing scheduling techniques by maximizing the system throughput without harming the user fairness performance.