

A data-driven user steering algorithm for optimizing user experience in multi-tier LTE networks

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Multi-tier cellular networks are a cost-effective solution for capacity enhancement in urban scenarios. In these networks, effective handover schemes are required to assign users to the most adequate layer. In this paper, a data-driven self-tuning algorithm for user steering is proposed to improve the overall Quality of Experience (QoE) in multi-carrier Long Term Evolution (LTE) networks. Unlike classical approaches, user steering is achieved by changing Reference Signal Received Quality (RSRQ) based inter-frequency handover margins. To drive the tuning process, a novel indicator showing throughput changes in the vicinity of handovers is derived from connection traces. Method assessment is carried out in a dynamic system-level LTE simulator implementing a real multi-carrier scenario. Results show that the proposed algorithm significantly improves QoE figures obtained with a classical inter-frequency handover scheme based on Reference Signal Received Power (RSRP) measurements.