6. Conclusion

With advanced technology, wireless users can install various applications on their mobile devices. These resource-limited devices may be transmitting information of different QoS requirements from time to time. It is critical for the device to be capable of promptly optimizing the transmission all the time, in order not to consume too much energy. This paper presented an improved autonomous cross-layer optimization which solved the aforementioned problem. Simulation results showed the proposed design saved 50% computation power of the autonomous cross-layer optimization proposed in Ref .2, while achieved close performance for a cellular network. The integration of the proposed cross-layer design into the unified heterogeneous network platform was also proposed. Simulation of the improved cross-layer design with a Bluetooth network was done with a promising result which proves that our design is flexible and the integration with the unified platform is possible to accomplish. With the rapid development of mobile networks, 5G cellular networks are already being researched to provide even higher data rate and wider coverage than 4G LTE does[32]. It is possible that our work could serve to deliver data more quickly and reliably for the 5G networks. Our future research will be to implement this design on real hardware as in Ref. 33, and to complete the integration with the unified platform of heterogeneous networks in reality.

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