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Integrated broadband power line and Visible Light Communication (VLC) system using OFDM and turbo code

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As technology has been evolving in the last decade with respect to different disciplines. Today, we focus on the communication scheme and its integration through Power Line Communication (PLC) and Visible Light Communication (VLC) systems. Most of the current proposed integrated systems are through Direct Sequence Spread Spectrum (DSSS) and OFDM techniques, where they are considered as candidates for future broadband PLC networks. Some work has been done in the area of using power line for communications but these systems suffer from noise and distortion. Our work is different in a sense it is incorporating turbo codes in the integrated system to increase the system robustness to noise and distortion. The signal data to be transmitted will be connected through the Power Line modulator which is connected to the wall socket. The PLC modulator is then connected to the VLC modulator for the transmission of the signal in the air. At the receiver side however, the transmitted signal is then received through the VLC demodulator followed by the PLC demodulator. By introducing the turbo coder and decoder, we anticipate to have better performance for the integrated system to noise and distortion. The use of the OFDM with multiple carriers in the system will enable multiple users to access the system simultaneously. The performance of the system will be measured through comparing the BER rate for the system with and without the turbo codes. The BER rate will be measured with respect to the signal to noise ratio, data rate and distance.

Biography

Nader Nassar is in the final year of his Bachelor's degree in Telecommunication Engineering at the University of Wollongong. His professional memberships include the following but not limited to; Institute of Electrical and Electronics Engineers (IEEE), Engineers Australia, and AIESEC.

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