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Send, Receive: How do you do?

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Abstract

Data communication is the process of transmitting messages using symbols or electrical signals from a sender to a receiver based on negotiated rules. The ultimate purpose of data communication systems is to facilitate resource sharing and communication between interconnected autonomous computer systems. Data communication systems can be categorised by type, composition and technology. Shannon-Weaver's Communication Model consisting of information source, sender, message, noise, channel, receiver, destination and feedback loop have guided my research. The inaugural lecture title "*Send, Receive: How do you do?*" was used to highlight my contributions to the fields of Data Communications, Computer Networks, Information Security, Management and Natural Language Processing. With over 100 publications, I have 44 publications focused on the sender, 33 publications on the receiver, and 31 publications on the protocols i.e. how do you do?

Existing migration patterns for data collection on multiple hosts accumulated the data in the mobile agent. This led to poor performance of migration strategies such as push-to-next-host, push-to-all-hosts, pull-all-code-units, and pull-code-per unit, that Java-based mobile agent systems used. Our modified data migration patterns had better transmission time for all migration strategies as the number of hosts visited exceeded four. This implies reduced transmission time when used for data mining and information retrieval.

Short Message Service (SMS) relies on computing devices such as routers and servers to deliver messages to subscribers on a cellular network. However, not all messages sent by subscribers are delivered. The results prove that SMS delivery improved when the availability of the recipient is first checked by the newly introduced SMS router. The proposed SMS delivery solution can also serve as a safeguard against network congestion caused by bulk messages. Although the addition of a new network element introduces latency, the delay is only a few milliseconds and is insignificant from the subscriber's perspective.

Sleep Deprivation Attacks (SDA) prevents nodes from going into sleep mode, drains their batteries and disrupt communication within the network. These challenges result in high infrastructural maintenance cost, Denial of Service (DoS), non-transmission of data and data loss. Ensemble On-demand Low Energy Adaptive Clustered Hierarchical (EO-LEACH) protocol was developed from the strengths of Adaptive On-demand Distance Vector (AODV) and Low Energy Adaptive Clustered Hierarchical (LEACH) routing protocols. The performance evaluation showed that EO-LEACH had lowest end-to-end delay with SDA; highest throughput with SDA; similar Packet Delivery Ratio with or without SDA; and the best Success Rate in presence of SDA.

Recommendations were made to individuals on improving their communication skills, adoption and optimisation of data communication systems at University of Ibadan was suggested, and government support for the developers of indigenous digital communication systems encouraged. I shared my leadership experiences within the university, professional associations and non-profit organisations to highlight my creative, innovative and growth mindset. My achievements, community service and supervision since I joined University of Ibadan were listed. The inaugural lecture concluded with appreciation to all those who contributed to my growth and development.

Keywords: Shannon-Weaver model, Data communication, Mobile agents, Sleep Deprivation Attacks, 5G OOFDM, NaijaCAPTCHA