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On-body Packet Routing Algorithms for Body Sensor Networks

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Abstract: This paper presents a location based store-and-forward packet routing algorithm for wireless body area networks (WBAN) with frequent postural partitioning. A prototype WBAN has been constructed for experimentally characterizing on-body topology disconnections in the presence of ultra short range radio links, unpredictable RF attenuation, and human postural mobility. A location based packet routing protocol is then developed. The performance of the proposed protocol is evaluated experimentally, and is compared with a generic probabilistic routing protocol and a specialized on-body packet flooding mechanism that provides the routing delay lower-bounds. It is shown that via successfully leveraging the node location information, the proposed algorithm can provide better routing delay performance compared to existing probabilistic routing protocols in the literature.