

We study wireless sensor network (WSN) node placement in an environment where RF signal losses vary with position. This reflects real-world outdoor environments where vegetation and topography cause non-uniform path loss. Many techniques that solve for a variety of objective functions subject to various constraints have previously been proposed for node placement. However, many of these methods make simplifying assumptions such as all nodes having the same transmission range. Our goal is to take the insights and approaches of this previous work and extend it to real-world environments. The present work assumes we have a map that quantifies the path loss behaviour of the real environment. Based on this map, and a path loss model that accounts for spatial variations in the path loss exponent, we propose a node placement algorithm for two-tiered WSNs that maximizes the area covered by a specified number of relay nodes and sensor nodes.