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Over the Air Programming Method for Learning Wireless Sensor Networks

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Abstract : Wireless sensor networks (WSN) are small or tiny devices that consists of different sensors to sense physical parameters like air pressure, temperature, vibrations, movement etc., process these data and sends it to the central data center to take decisions. The WSN domain, has wide range of applications such as monitoring and detecting natural hazards like landslides, forest fire, avalanche, flood monitoring and also in healthcare applications. With such different applications, it is being taught in undergraduate/post graduate level in many universities under department of computer science. But the cost and infrastructure required to purchase WSN nodes for having the students getting hands on expertise on these devices is expensive. This paper gives overview about the remote triggered lab that consists of more than 100 WSN nodes that helps the students to remotely login from anywhere in the world using the World Wide Web, configure the nodes and learn the WSN concepts in intuitive way. It proposes new way called over the air programming (OTAP) and its internals that program the 100 nodes simultaneously and view the results without the nodes being physical connected to the computer system, thereby allowing for sparse deployment.

Keywords : WSN, over the air programming, virtual lab, AT45DB
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