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**DEPARTMENT OF
ELECTRONICS AND COMMUNICATION ENGINEERING**

A PROJECT REPORT ON

**“APPLICATION OF ZIGBEE FOR POLLUTION
MONITORING USING AUTOMOBILES”**

Submitted in partial fulfillment of the requirement for the award of the degree
of

**BACHELOR OF ENGINEERING
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Under the Guidance of

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Abstract:

Micro-climate monitoring usually requires deploying a large number of measurement tools. By adopting *vehicular wireless sensor networks (VSNs)*, we can use fewer tools to achieve fine-grained monitoring. This work proposes VSN architecture to realize micro-climate monitoring based on ZigBee on vehicles.

We demonstrate our prototype of a ZigBee-based car network to monitor the concentration of carbon dioxide (CO₂) gas in areas of interest. The reported data are sent to a server, which is integrated with Maps as our user interface. Since mobility of these vehicles is not controllable and sending short messages incurs charges, we also design an on-demand approach to adjust vehicles' reporting rates to balance between the micro-climate accuracy and the communication cost.

Wireless sensor networks have been widely applied to surveillance or monitoring scenarios. However, they do not discuss how to exploit mobility to reduce monitoring cost. Mobile sensor deployment and dispatch have been intensively studied to deploy multiple types of sensors on bicycles to analyze various roads information. It adopts cameras and chemical sensors to monitor pollution on streets, and vehicles may exchange their sensing data when they meet with each other. Compared to these work, our work is unique in trying to reach a balance between message overheads and sensing quality, under dynamically changing environments.