



**Aquitaine –Karnataka collaboration
Scientific Project for Pre-PhD student exchange
Scientific Proposal**

Project Title	Wireless Sensor Network for City environmental conditions Monitoring Systems
Scientific domain	Environmental Engineering, Wireless Communications, Wireless Sensor Networks
Summary (ca. 10 lines)	<p>Industrial units are established all over the state of Karnataka. These units pollute the environment raising serious concerns on human health. In addition, sewers get choked in the rains and this causes flooding of contaminated water in the city. An efficient environment monitoring and protection system is required to monitor and control the environment in the state.</p> <p>This project proposes an efficient wireless sensor networking communication system that will be designed, deployed and implemented to provide adequate warning on potential blockages in sewers. By monitoring the water level of the drainage (or gully pots), concerned authorities will be informed early about actions they can take to address blockages and leakages within the sewer infrastructure. Hence, the number of residential sewer flooding and pollution incidents can be reduced. In addition, we would design sensor nodes to measure the gas emissions in the city.</p> <p>We also propose to develop application software to receive the data from the sensor network. In this work, the application software is composed of two different groups. A WSN distributed application for the sensor nodes in the network and a management application for the laptop. The gateway/router works as an interface between the network and the laptop. The management application receives and processes data from the sensor network and informs the concerned authority. Development of this system will help the concerned authorities control and protect the environmental status in the cities of Karnataka state.</p>
Student profile wished	Computer Networks, Programming in C, Java/C#, scripting languages, Embedded Systems, Wireless sensor networks and

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	Cloud Computing.	
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Timing & duration for project (give approximate ranges)	From 3 to 6 months	
Selected Publications	<ul style="list-style-type: none"> S. Gama, M.N. Thippeswamy, T. Wallingo, and F. Takawira, "Cooperative Relaying Schemes For Energy Efficient Mac For WSNs", Proceedings of International Conference on Networks, Information and Communications(ICNIC2014), Elsevier Science and Technology Publications, ISBN: 9789351072607, pp: 9-16, 10-12, July 2014. M.S Pramod, B. Dileep Reddy and M.N. Thippeswamy, "Wireless Monitoring of PrePaid Energy Meter", Proceedings of International Conference on Networks, Information and Communications(ICNIC2014), Elsevier Science and Technology Publications, ISBN: 9789351072607, pp: 33-39, 10-12, July 2014. Sithembiso Gama, Thippeswamy Muddenahalli, Tom Wallingo and Fambirai Takawira, "Energy Efficient Distributed Receiver Based Cooperative MAC for Wireless Sensor Networks", Proceedings of IEEE AFRICON 2013, Mauritius. Thippeswamy M.N. and F Takawira, "DRMACSN: New MAC protocol for Wireless Sensor networks", in the Proceedings of the Southern Africa telecommunication networks and applications conference (SATNAC 2009), 30 August -2, September, 2009, Royal Swazi spa, Swaziland. 12. Thippeswamy M. N. and F Takawira, "Queuing analysis of DS-CDMA based MAC protocol for Wireless Sensor Networks", Wireless Sensor Systems, the Institution of Engineering and Technology Wireless sensor systems (IET WSS), Vol. 3, Issue 1, pp. 69 - 79, DOI: 10.1049/iet-wss.2012.0068, Print ISSN 2043-6386, Online ISSN 2043- 6394, 04/06/2013. N.V. Pillay and Thippeswamy M.N., "Design and Implementation of Wireless Sensor Network for Wildlife Monitoring", in the Proceedings of the Southern Africa telecommunication networks and applications conference (SATNAC 2009), 30 August -2, September, 2009, Royal Swazi spa, Swaziland 	

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