1. Overview

Wireless Sensor Networks (WSNs) are finding widespread applications in the areas of Internet of Things (IoT), smart environments, industrial automation, home automation, health care, and so on. Due to the fact that wireless sensors are often battery operated and have small form factor, there arise significant challenges in the efficient design and deployment sensor networks. Although a lot of work has been done in recent years on the design and simulation of WSN protocols, relatively less attention has been given to the algorithmic and theoretical foundations of WSNs. This course focuses on the algorithmic foundations of WSNs with emphasis on current applications, such as cyber-physical systems and smart environments.

This course will cover some of the important problems in WSNs, such as topology control, data fusion, clustering, coverage and connectivity, and localization. The course will also examine current security issues in WSNs and counter measures to handle them. The use of these algorithms in present day applications like cyber physical-systems, IoTs, and smart environments will be presented. The course will also include interactive tutorials, demonstration of current research work being carried out related to the above topics. The course will end with a discussion on future research trends of WSNs and their application in further emerging areas. Additionally, the participants will learn how to conduct excellent research and publish in high quality journals and conferences.

2. Objectives

1. Introduce the participants to the architecture and modelling of WSNs.
2. Expose the participants to the various algorithmic aspects of WSNs.
3. Enable the participants to critically analyze and design solutions to new problems arising out of this domain.
4. Extend the theoretical concepts towards applications and provide tutorials to address real world problems.
5. Exposure to some present day applications and their solutions, through demonstrations.
6. Introduce participants to open problems in WSNs and give future research directions.
7. Develop skills to do original research and write high quality scientific papers.

3. The Faculty:

Prof. Sajal K. Das:

Dr. Sajal K. Das is a Distinguished Professor of Computer Science and the Daniel St. Clair Endowed Chair Professor at the Missouri University of Science and Technology, Rolla, USA. During 2008-2011 he served the US National Science Foundation as a Program Director in the division of Computer Networks and Systems. His research interests include theory and practice of wireless and sensor networks, mobile and pervasive computing, cyber-physical systems, smart environments (including smart grid and smart health care), security, distributed and cloud computing biological and social networks, applied graph theory and game theory. His research on wireless sensor networks and pervasive and mobile computing is widely recognized as pioneering. He is a Fellow of the IEEE. Das has published 680+ papers, gathering 24,000+ citations according to Google Scholar and 52 invited book chapters. He is one of the most prolific authors in computer science according to DBLP. His current h-index is 77 and has an Erdős number of 3.

Govt. of India, Ministry of Human Recourses Development (MHRD), Scheme on Global Initiative on Academic Network (GIAN)

5 days short term course on

ALGORITHMIC FOUNDATIONS OF WIRELESS SENSOR NETWORKS WITH APPLICATIONS

Dec. 10-14, 2017

Organized by

Department of Mathematical and Computational Sciences and
Department of Computer Science and Engineering

National Institute of Technology Karnataka
Surathkal, Mangalore -575025, India.
http://www.nitk.ac.in/
About NITK
The National Institute of Technology Karnataka (NITK), Surathkal has established itself as one of the top technological institutions in India and richly deserved recognition as an Institute of National Importance under the NIT Act 2007. Research culture is taking shape in the institute through enhanced R & D activities, creation of centers for interdisciplinary research, establishment of industry-sponsored Chairs, stronger interface with industry, alumni and a special focus on new post-graduate and doctoral programs. Team NITK is fully geared to take on the challenges of the 21st century to establish itself as a World-Class Technological Institution. Prof. Karanam Umamaheshwar Rao, is the the Director of NITK Surathkal.

About Department of MACS
The Department of Mathematics (today called, the Department of Mathematical and Computational Sciences) started along with the institute(1960). The department caters to the needs of the UG and PG Engineering Mathematics. It runs two PG programmes, namely, the Master of Computer Applications (MCA) and Master of Technology (M.Tech.) in Computational Mathematics (CMA). The department offers the regular Doctoral Programmes in Mathematics and Computer Applications.

About Department of CSE
The Department of Computer Science & Engineering was established in the year 1986. Since then it has consistently fulfilled its role of producing Computer Engineers ready to meet the demands of the IT world. The department has always attracted the best of engineering aspirants from all over the country. The Department offers B.Tech., M.Tech., M.Tech.(By Research) and Ph.D. courses in Computer Science and Engineering. The department has adequate facilities to support these teaching activities.

Students of the department have access to sufficient high end computing facilities. The department has signed MoU with IBM, Intel, Leeds Metropolitan University and others, for academic collaborative projects.

Course duration: Dec 10-14, 2017

Maximum number of participants: 60

Who should attend?
Students at all levels (B. Tech / MCA / MSc / M. Tech. / Ph. D).
Faculty members from academic institutions and practicing engineers from research organizations.
Professionals from industry working on design and development of algorithms related to wireless sensor networks and their applications.

Course fees:(non refundable)
Faculty and students from NITK: Free
UG and PG students from other institutes: ₹ 1000/-
PhD and Post Doc fellows from other institutes: ₹ 2000/-
Academia/research organizations: ₹ 3000/-
Participants from industry: ₹ 5000/-
Foreign Participants: US $200

This registration fee (non refundable) includes all instructional materials, use of laboratory facilities for tutorials, access to the Internet and lunch and tea on all days. The participants will be provided with on campus accommodation on payment basis.

Registration details:
The details of registration is given in the attached registration form.

Registration deadline: 20th November 2017
Selection intimation: 22nd November 2017

Host Faculty:
Pushparaj Shetty D. :
Dr. Pushparaj Shetty D, is working as an Assistant Professor in the Department of Mathematical and Computational Sciences at the National Institute of Technology Karnataka, Surathkal, India. He has B.E and ME and PhD. in Computer science and Engineering discipline.

His research interests are in the area of Wireless Sensor Networks, Graph algorithms and Cloud computing. He has more than 16 years of teaching experience.

Saumya Hegde (Host Faculty)
Mrs. Saumya Hegde is presently working as an Assistant Professor in the Dept. of Computer Science and Engineering at the National Institute of Technology Karnataka, Surathkal. She has completed her B. E. in Computer Engineering from Mangalore University and her M. Tech. in Computer Science and Engineering from NITK Surathkal. She is currently pursuing her doctoral research at NITK Surathkal in the area of Software Defined Networking.

Coordinators:
Dr. Pushparaj Shetty D. Assistant Professor, Department of MACS, NITK Surathkal, India prajshetty@gmail.com Tel: +919449024946
Mrs. Saumya Hegde Assistant Professor Department of CSE NITK Surathkal, India hegedsaumya@gmail.com Tel: +919482513958
National Institute of Technology Karnataka, Surathkal
A Short term course on
ALGORITHMIC FOUNDATIONS OF WIRELESS SENSOR NETWORKS WITH APPLICATIONS
Dec 10-14, 2017

REGISTRATION FORM

Name (In Block Letters):_________________________________________

Designation:_________________________________________

Qualification:_________________________________________

Institution:_________________________________________

Address:_________________________________________

Email id:_________________________________________

Mobile:_________________________________________

Accommodation Required: YES/NO

Category of participation:

☐ Faculty/Student/Research Scholar of NITK Surathkal

☐ UG and PG students from other institutes

☐ PhD and Post Doctoral fellows from other institutes

☐ Participants from academia and research organizations

☐ Participants from industry

Details of payment:

Registration Amount ₹: ______________________

NEFT Ref. No. and Date: ______________________

Registration Procedure:

Interested participants must first register at the GIAN portal
http://www.gian.iitkgp.ac.in/GREGN/index

The selected participants will be informed by email.

The participants need to fill in the attached registration form.

The payment should be through NEFT

Account Number: 10175365060

Name of the Account: Director NITK Surathkal

Bank: State Bank of India, NITK Campus Branch, 575025

IFSC: SBIN0002273

Note: In NEFT remarks please include GIAN-AFWSNA-2017-[Your first name]

Course Fees:

The participation fees for the course is as follows:

Faculty/Student/Research Scholar of NITK Surathkal: Free

UG and PG students from other institutes: ₹ 1000/-

PhD and Post Doc fellows from other institutes: ₹ 2000/-

Participants from academia and research organizations: ₹ 3000/-

Participants from industry: ₹ 5000/-

Participants from abroad: US$200

The above fee is non refundable and includes all instructional materials and assignments, laboratory equipment usage charges and refreshments.

Accommodation:

The participants will be provided accommodation at the Institute hostels on payment basis depending on the availability. The cash payment may be done on arrival at Hostel office.

Address for all Correspondence

Dr. Pushparaj Shetty D.
Coordinator
Assistant Professor,
Department of MACS,
NITK Surathkal, India
prajshetty@gmail.com
Tel: +919449024946,

Mrs. Saumya Hegde
Coordinator
Assistant Professor
Department of CSE
NITK Surathkal, India
hegdesaumya@gmail.com
Tel: +919482513958