Indian Institute of Science (IISc), Bengaluru, Karnataka
Department of Electrical Communication Engineering
Network Labs

Post Doc Opening in a Funded Project

Project objectives

The project is broadly in the area of Control Of and Control Over Wireless Networks (COCOWiNets) in the context of smart factory applications. The research topics will be:

1. Mechanisms for quality of service (QoS) in wireless networks, for applications arising in smart factories, specially 5G and 5G+ technologies and Wi-Fi.
2. Wi-Fi and 5G convergence for supporting demanding applications, including seamless QoS handover, even across wireless technologies.
3. Real-time monitoring and control of machines and vehicles on the factory floor, when the controller is connected across a wireless network. This will require dealing with problems of control of the wireless network, and control over the wireless network, while taking into account all the nonidealities of the network.

Our work approach is to propose or derive algorithms, to study them by simulation and by implementation on "over-the-air" test-beds in a factory demonstrator in IISc, and to theoretically establish various properties of the algorithms. The applicant must be analytically inclined, with strong concepts and an enquiring mind.

Expectations from the Applicant

PhD in ECE (Electrical Communication Engineering, or Electrical and Computer Engineering) or Computer Science. Preference will be given to a large subset of the following knowledge and experience.

- Wireless communications and networking
    - Familiarity with the concepts, protocols, and standards
    - … via coursework or project work
- Stochastic systems and related mathematics
- Optimisation and stochastic control
- Basic concepts of machine learning and reinforcement learning
- The ability to read and understand research articles and standards documents

The following skills would be beneficial but are not essential
- Experience in using Matlab, along with familiarity in C/C++/Python
- Working knowledge of the Linux OS and networking software

Advantages of working in a short-term contract position in IISc?

- Opportunity to work on the frontiers of technology, with state-of-the-art equipment, and acquire skills relevant to the industry and to academia
- Opportunity to work with leading researchers from India and abroad
- Combination of systems research, software development, and experimentation
- Opportunities to participate in various lectures and workshops in IISc
- Potential for academic publications, thereby enhancing career opportunities

Application process: A CV, including educational qualifications with GPA/CPA/percentage (as applicable), relevant courses taken, and projects done, list of publications and patents, career objectives, and names and email addresses of two references, should be sent to Ms. Sushma Srinivasan sushmas@iisc.ac.in with a copy to Prof. Anurag Kumar (Project PI), anurag@iisc.ac.in, to reach by Monday 22nd July, 2024. The selection process will be completed by 29th July, 2024.