# Workshop (online)
# On

# Intelligent Edge Computing for Cyber Physical System and Cloud Computing

## (Sponsored By: ICPS Division DST)

## 4th to 6th March, 2022

***Organised by***

**Department of**
**Computer Science andEngineering,**
**Indian Institute of Technology Patna**
**Bihta, Bihar, India.**

## About IIT Patna

Indian Institute of Technology Patna, established in August 2008, is an autonomous institute of education and research in science, engineering and technology located in Bihta, 35 km from Patna. The new campus is spread over 500 acres of green land.

As of today, IIT Patna has 10 academic departments that offer B.Tech, M.Tech, MSc and PhD programs. The faculties of this institute come with academic and research training from various institutes of excellencewithin the country and abroad. The recent publication records of the faculty with several practical constraints appear to be outstanding.

It includes many reputed national and international journals.Research activity in IIT Patna has been published in high quality and peer-reviewed national and international journals. Please browse individual faculty member web-page for more information. Faculty members of IIT Patna have been also participating in national and international conferences of repute.

## Organizing –R&D Section IITP

Patron: Prof T.N.Singh,
Director, IIT Patna

Workshop Coordinator: Dr. Rajiv Misra (PI),
Professor, CSE Dept.
IIT Patna

## About the Department

The department came into existence in 2008 with miniscule faculty strength and minute undergraduate student body. Since then, it has witnessed amanifold raise in the size of the vibrant student body. Presently, all efforts are geared towards making this the first choice of aspiring undergraduates. Thisis being groomed to be the favored destination for research scholars brimming with ideas. The department boasts of generously equipped teaching andresearch laboratories. Doctoral candidates are liberally supported either by scholarships or by sponsored fellowships. Sponsored research anddevelopmental activities add muscle to the buzzing academics. Future beckons this young department.

## Workshop Overview

Cyber Physical Systems (CPS) and Cloud Computing have received tremendous research interest and efforts from both academia and industry. Cloud computing extends the computing and storage ability of CPS and leads to a new paradigm—Cyber Physical and Cloud Systems (CPCS), which is a product of combining CPS and Cloud Computing together. It enables a new breed of applications and services, such as industrial process control, video surveillance, structural health monitoring, and intelligent agriculture, and can fundamentally change the way that people interact with the physical world.

However, CPCS face many important challenges. First, the Cloud can neither manage CPS devices directly nor satisfy requirements of real-time. Second, communication bottleneck exists between CPS and the Cloud. Third, new security challenges need to be overcome to accelerate the development of these integrated applications. In particular, edge computing, acting as a new computing scheme, is a promising technology to address these challenges. It extends the Cloud Computing paradigm to the edge of the network. For example, edge computing devices, which are capable of intelligent computing, can reduce the network latency by enabling computation and storage capacity at the edge network. These so-called edge devices can bridge the gap between CPS and Cloud. The intelligent computing and storage on edge devices offer the potential to solve the communication problem, real-time problem, and security problem.

## Workshop Objectives

This workshop is aimed at giving Faculty, Research Scholars and Students an in-depth understanding of terminologies and the core concepts behind developing an intelligent computing for edge devices and to fill the gap between CPS and Cloud.Moreover, the outcome of this workshop exhibits the latest research achievements and state-of-art research results to solve intelligent computingissues for CPCS.

The specific topics include:Inception of Edge Computing,Edge AI, Connected Intelligence at Edge, Edge Data Analytics, Multi-modal Data Analytics at Edge, Challenges and Opportunities in Edge/Fog Management and Orchestration, Deep Learning Applications for CPSS, Research Areas for CPSS etc. This workshop is organized underInterdisciplinary Cyber Physical Systems (ICPS)division of DST.

## Workshop Schedule(online)

| | 10.00-11.30 | 12.00-13.30 | 14.30-16.30 |
|---|---|---|---|
| **Day 1 (04.03.22)** | **Registration and Inauguration** | **Inception ofEdge computing** | **Multi-Modal Data Analytics at Edge** |
| **Day 2 (05.03.22)** | **Edge AI** | **Connected Intelligence at Edge** | **Challenges and Opportunities in Edge/Fog Management and Orchestration** |
| **Day 3 (06.03.22)** | **Edge Data Analytics** | **Deep Learning Applications for CPSS** | **Research Areas for CPSS** |

## Resource Person (s)

1. Prof. Rajkumar Buyya, CLOUDS Lab, School of Computing and Information Systems, The University of Melbourne, Australia
2. Dr. Rajeev Sharma, ICPS Division, Department of Science and Technology (DST), Govt. of India
3. Prof. Rajesh Hegde, Dept. of Electrical Engineering, IIT Kanpur, India
4. Prof. D. Jankiram, IIT-Madras ( tentative)
5. Prof. R.K. Shyamsunder, IIT Bombay (tentative)

## How to Register

The participation in the workshop is free, There is no participation fee.

**Registration:**

For registration click on the following link:

**https://forms.gle/S3gWd1haALpYbhzw7**

**Selection Criteria and Certificate Issuing:**

Selection will be done on First Come First Served basis. An E-Certificate of participation of IIT Patna will be awarded to all participants after successful completion of the workshop.

**Registration Deadline:** February 25, 2022

**For Further Enquiry Contact:**

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