Global Initiative of Academic Networks

course on

Human Centered Robotics

9th May to 13th May 2022

Organized by

PDPM Indian Institute of Information Technology, Design and Manufacturing, Jabalpur, MP, India

About GIAN

"Global Initiative of Academic Networks (GIAN)" is a scheme initiated by the Govt. of India in Higher Education aimed at tapping the talent pool of scientists and entrepreneurs, internationally to encourage their engagement with the institutes of Higher Education in India to augment the country's existing academic resources, accelerate the pace of quality reforms, and elevate India's scientific and technological capacity to global excellence. Under the GIAN program, lecture courses by internationally renowned experts are being organised to garner the best international experience into our systems of education, enable interaction of students and faculty with the best academic and industry experts from all over the world and share their experiences and expertise to motivate people

About PDPM IIITDM Jabalpur

IIITDM Jabalpur was established in 2005 with a focus on education and research in IT enabled Design and Manufacturing. Identified as an Institute of National Importance by the Govt. of India, PDPM IIITDM Jabalpur has been playing a vital role in producing quality human resources for contribution in India's mission of inclusive and sustainable growth. The Institute offers undergraduate, postgraduate and PhD programmes in Computer Science and Engineering, Electronics and Communication Engineering, Mechanical Engineering, Smart Manufacturing, Design and PhD programmes in Mathematics and Physics. The Institute campus is spread over 250 acres of lush green land close to Dumna Airport, Jabalpur. The Institute is 10 kms from the main railway station and 5.5 kms from Dumna airport, Jabalpur.

About the course

Overview

The course covers the background and most of the innovative forms of human centered robotics and physical interaction between humans and robots. The course will present the foundations of the robotic manipulation, human robot collaboration and bilateral teleoperation. Most of the physical interaction between humans and robots occurs through hands. In this course, collaboration of human hands and robotic manipulators in performing cooperative tasks will be studied. Novel form of interaction of humans with robots will also be introduced in the course. Finally, the participants will be exposed to applications of the human-robot interactions in medicine, gaming, and virtual reality.

The aim of the course is to provide the participants an exposure to methodological and technological tools of human robot interfaces. We believe that the interaction of humans with robots will be a common scenario in the next future. The course is grounded on the classical robotics and human-computer interfaces and opens new perspectives towards innovative paradigms of haptics, teleoperation and team cooperation between human and robots in different tasks.

Course objectives:

- Exposing participants to the fundamentals of haptics and human-robot interaction.
- Providing exposure to practical problems and their solutions in haptics.
- Providing exposure to practical problems and their solutions in robotic manipulation.
- Learn how to design important human robot interaction paradigms.

Who can register:

- Faculty and research scholars working / interested in robotics, artificial intelligence, and related domains
- Executives and engineers from manufacturing, service and government organizations including R&D laboratories.
- Student at all levels (bachelor /master and PhD level) from higher and technical institutions.

Faculty

Prof. Domenico Prattichizzo
University of Siena, Italy

Prof. Domenico Prattichizzo is a Full Professor of Robotics and Automation at University of Siena, and Senior Scientist at Istituto Italiano di Tecnologia in Genoa. He is also the Co-founder of WEART, a startup on Wearable Haptics and Tactile Communication. Prof. Prattichizzo is an internationally recognized expert in the fields of Haptics, Robotics and, Wearable technology. Main applications of his research works are in virtual and augmented reality scenarios and in the rehabilitation of people with upper and lower limbs, visual and cognitive impairments. He has been the Fellow of the Institute of Electrical and Electronics. Engineers (IEEE) in 2016 for contributions to haptics and multi-fingered robotic hands.

Prof. Aparajita Ojha is a professor of Computer Science and Engineering at PDPM Indian Institute of Information Technology, Design and Manufacturing, Jabalpur, India where she has also served as the Director from Feb 2009 to Feb. 2015. Prof. Ojha has published more than 70 articles in AI and Machine learning, steganography, path planning for robotics, spline approximation and finite element methods.

Prof. Aparajita Ojha
PDPM-IIITDM, Jabalpur, India

Dr. V. K. Gupta
PDPM-IIITDM, Jabalpur, India

Prof. Vijay Kumar Gupta is a Professor of Mechanical Engineering at PDPM IIITDM Jabalpur. He obtained his Ph.D. degree from IIT Bombay in 2003. Prof. Gupta's research interests include Vibration, Condition Monitoring, Smart Structures, FEM, Mechatronics and Robotics. He has been a recipient of ISAMPE K. Suryanarayan Rao Memorial Senior student award in the Year 2003 for his Ph.D. work on smart structures. He is also a recipient of JSPS Short Term Invitation Fellowship. He has published more than 50 research articles and edited three books.

Course Coordinators:

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Registration Steps:

1. Register online at: ***http://gian.iitkgp.ac.in/GREGN/index***
2. The registration fee can be paid through NEFT/RTGS:

Account Name:	PROJECT ACCOUNT PDPM IIITDM JABALPUR
Account No.	50210022387
Bank IFS Code:	IDIB000M694
Bank MICR Code:	482019014
Bank Name:	Indian Bank
Branch Name:	Mehgawan, IIITDM, Campus Branch, Jabalpur

3. Please add the online transaction number in the following Google form:
https://forms.gle/jKfPdoNZxZRQnPji9

Registration Fee:

- Industry/ Research Organizations: **INR 4000**
- Academic Institutions (Faculty and Research Scholars): **INR 1000**
- Students: **INR 500**
- Participants from SAARC and least developed countries: **INR 1000** and from other countries : **US $100**

Last date of online registration:

May 4, 2022